

# COMMERCIAL CAR JOURNAL

AUGUST 6 1932

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*Pierce-Arrow heavy duty trucks have been reduced \$1099 to \$1699 each. Write for new price list.*

# PIERCE-ARROW

BUFFALO, NEW YORK



# COMMERCIAL CAR JOURNAL

with which is combined *Operation & Maintenance*

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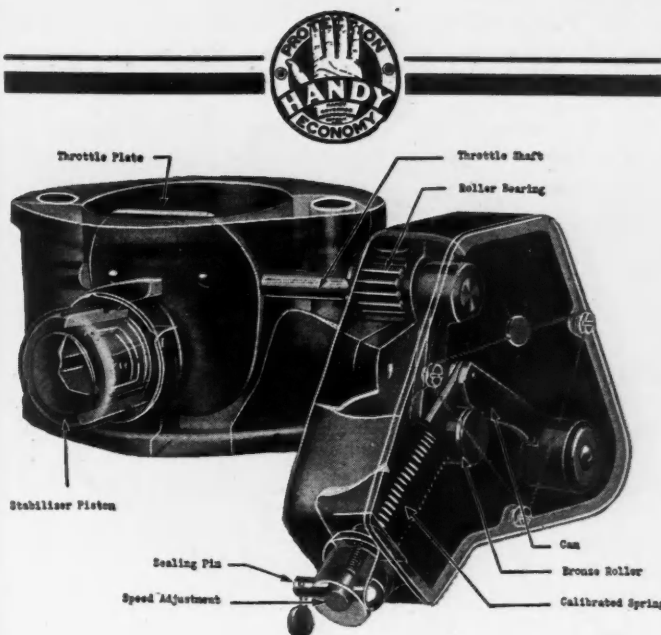
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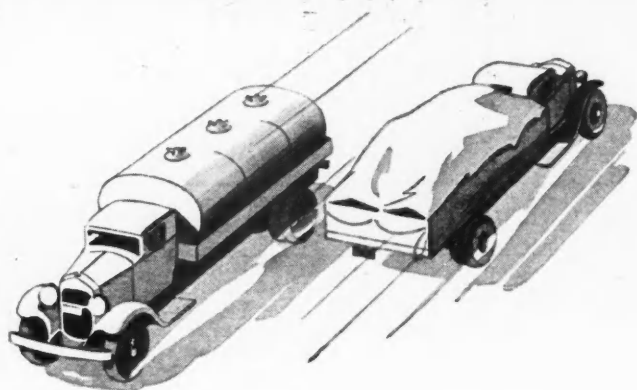


# The Standard of the World's Truck Industry

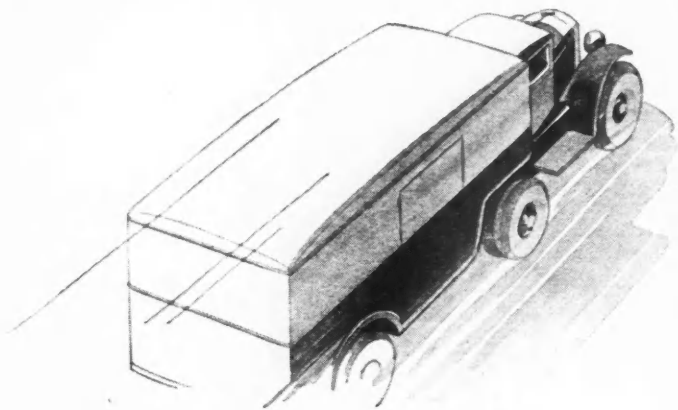
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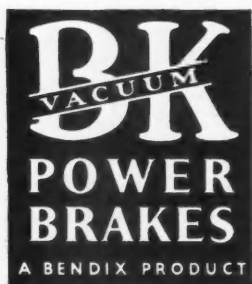
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# COMMERCIAL CAR JOURNAL

PHILADELPHIA  
AUGUST, 1932

PENNA.  
VOL. XLIII, No. 6

## THE PRESIDENT'S PAGE.

**D**URING the coming year of 1933, we are scheduled to witness regular sessions of legislatures in some 31 states and can expect to see special calls involving the balance of the 48 states. The public mind is definitely turned to tax measures, particularly relief if possible on personal property and real estate.

The big question right now is what steps are being taken by the motor industry to get fair, impartial and just consideration during these legislative deliberations.

We can fully expect to see continuation of a nation-wide effort by rail interests, through powerful lobbies, bills prepared by railroad attorneys, introduced and passed, that may remove motor transport from the highways.

Measures recently brought out along the lines of ton-mile tax no longer leave any doubt in anyone's mind as to the intent, although the talk and selling arguments are in the disguise of deterioration of roads, necessary regulation of trucks and bunn to the effect that neither trucks nor buses pay their rightful share of taxes.

The fact that recent bills hit the private owner, who uses motor transport in his own business, to better serve and distribute his wares to his customers is one bright aspect of the picture, as that represents directly and indirectly some five to ten million voters.

The seriousness of the situation may be better described by calling attention to the history of rail operations since the War. There has scarcely been one illustration of business sense in rail operations during all these years, but daily developments through political channels in forcing the public to accept their service. The motor industry is therefore faced with past masters in political maneuvering.

Business sense would justify a big reduction in passenger-car miles to save four hundred million dollars per year since the widespread use of privately owned automobiles; the inauguration of delivery service that the public wants, together with curtailment of all unnecessary expenses in bringing about rail operations on a more economic basis, and finally con-

Special calls of legislatures and squashing tax measures are likely in 1933. To fight the efforts of opposing interests the public should be informed of the effect of this activity and urged to vote

By

President  
Indiana Motors Corp.



tributing to lower costs of distribution. We haven't yet witnessed this sort of thinking on the part of railroads.

The next several months the motor transport industry should do some thinking and working. If it is not a sound economic business that serves the public in much needed and required fashion and should not exist, then we should sit idly by and permit these regulations and acts of state legislatures to run us out of business.

Every man, woman and child in America enjoys better standards of living and the progress of the country has improved by leaps and bounds since the advent of motor trucks. Every citizen is benefited.

Yet as an industry we are not alive to the strangulating problems that confront us.

The public should be fully informed

as to the amount of tax motor transport contributes, the effect of transportation vehicles on the highway, the truck's and bus' full share of keeping up roads and the economic value of motor transport service.

Of immediate importance, every truck or bus owner, factory employee, driver, mechanic, helper and their families should give careful consideration to the men they vote for this fall who next year will occupy the seats in our various state legislatures.



THE job applications below require only a brief introduction.

Last month the COMMERCIAL CAR JOURNAL, in an editorial entitled "Do You Want a Job?" offered its services "to the many good men in the truck industry who are unemployed through no fault of their own and no fault of their former employers—both victims of economic distress." The purpose of this offer was to acquaint executives everywhere with the manpower now available and to make it easy for executives to establish contact with such men as possess the necessary qualifications.

The applications on this page represent the first response of readers to this offer. As others are received they will be published in subsequent issues.

Addresses are given with applications so that prospective employers may get in direct touch with applicants. In the case of the anonymous applications, the editor of COMMERCIAL CAR JOURNAL will be glad personally to establish the contact.

Below the applicants speak for themselves, and doubtless among them are jewels that will sparkle in any organization.

**Baldwin, Clarence M.**, 4234-157th St., Flushing, L. I. Developed Brooklyn area for Republic and headed Republic Long Island City branch. Branch manager of Larrabee Deyo. For past two years has been handling national accounts for General Motors Truck Co. in New York City. Among organizations covered are American Tel. & Tel., Borden Co., Consolidated Gas, Electric Bond & Share, Purity Bakeries, Lofts, Loose Wiles Biscuit Co. and others of this calibre.

**Crippen, Geo.** (40), 31 W. 10th St., Erie, Pa. Eight years selling trucks retail and wholesale. 1924-25—Ford Motor Co., Detroit, truck representative covering Detroit branch territory in Michigan, Indiana and Ohio. 1926-27—Bielman-Taube Co., Detroit, retail truck manager, exclusive truck branch, eight salesmen. 1928—Autocar Co., Detroit, sales representative, trucks at retail. 1929—Chevrolet Motor Co., Detroit, sales representative, trucks at retail from factory branch. 1930—General Motors Truck Co., Pontiac, department manager, sales division. Transferred from Chevrolet. 1931-1932—Stirling Bros., Erie, Dodge distributor, truck manager until truck department was closed. Well qualified to handle management of wholesale or retail truck set-up or act as retail salesman. Studied and completed truck sales courses of General Motors Truck and Dodge Bros. Available at once and willing to locate anywhere. Satisfactory references.

**Dagner, Ed** (43), 1431 Jackson St., Oakland, Calif. 1906-12, drove truck and worked in shop. 1912-14 operated own Packard truck. 1914-15, service manager and truck salesman for Cylee Lee, Packard distributor, later taken over by Earl C. Anthony, Inc. 1915-17, traveling representative northern California for Earl C. Anthony, Inc. 1917-18, truck sales manager Henry Spring Co., White distributor northern California. 1918-23, field service and wholesale representative for The White Co. 1923-25, wholesale sales supervisor, White. 1925-27, division manager, Los Angeles branch, White. 1927-28, sales manager, Los Angeles branch, Fageol. 1928-29, in charge of coach and bus sales and assembling, Fageol. 1929-March 31, 1932—district manager, Portland branch, Fageol. April 15-July 20, 1932, temporary position making complete survey of Pacific Greyhound Stage Lines. Feels that with this experience can hold any of following positions: service superintendent, sales manager, branch manager, wholesale representative or fleet operator. Prefers position on the Coast but would consider any place if position worth while. (Note—Mr. Dagner submitted an extremely comprehensive list of references, much too lengthy for inclusion here but which will be furnished upon request).

**Dunn, H. J.** (53), 51 East 242nd St., Euclid, Ohio. 20 years in truck business. The White Co., 14 years in retail sales; one year as manager of used truck department. Pierce-Arrow (Cleveland), 6 mos. Acme, 1 yr. Stewart, 6 mos. Halford, 1 yr. Federal, 6 mos.

August, 1932



## THESE MEN

Relay, 1 yr. as sales manager of Cleveland branch. Desires position of sales manager, new or used. Prefers Cleveland territory due to connections and experience, but willing to go anywhere if enough compensation.

**Gallagher, Frederick A.** (40), 2221 N. Meridian St., Indianapolis, Ind. Employed by The White Co. from August, 1919, to June, 1932, seven years as expert road mechanic, five years as salesman and one year as territorial manager. Desires position as sales manager or salesman. Prefers Indiana, but with right connection will go anywhere.

**Giffin, John H.** (30), 136 Elm St., Keene, N. H. Seven years in truck business. Salesman for Robertson Motor Co., Keene, N. H. Dodge and Graham Bros., dealer, 1925-27; as Hupmobile and General Motors Truck dealer, 1927-31. Go anywhere. Desires sales position with possibilities for advancement.

**Harrington, D. R.**, 41-02 Forley St., Elmhurst, N. Y. Experience covers field thoroughly. Engineer by profession. Had charge of first fleet of trucks in New York City. Was Selden dealer, manager of one of the large Mack distributors, and operated own repair shop. In wholesale work, among others, introduced Universal, Chase and Duplex trucks in eastern territory. Feels experience would be invaluable to some of the larger truck companies as an instructor for retail salesmen. Not particular about territory.

**Huston, Putnam S.** (26), 177 Claremont Ave., Montclair, N. J. Seven years with Mack, with student training in New Brunswick, Plainfield and Allentown plants of Mack Co.; served in service and parts department in Newark; parts manager of Jersey City branch; salesman for over a year. Salesman for eight months with Sterling Motor Truck Co. of Newark. Will go anywhere in sales or service capacity.

**Jennings, Henry**, 4014 Berry Ave., Drexel Hill, Pa. In automotive industries 13 years. After year at

Fordham University was for about three and one-half years successively helper, mechanic and tester at Hudson factory branch in Chicago. One year as wholesale parts man for Cutting Larsen, Olds distributor in large New York territory. Three years with Durant in New York as tester, chief tester and assistant service manager. One and one-half years as assistant to A. B. Cumner, who was director of service of the eastern district for General Motors Truck and Yellow Coach. In this capacity equipped and set into operation five metropolitan shops. For one and one-half years assistant to president of Larrabee Deyo Motor Truck Co. Especial detail was sales and sales promotion among the hundred dealers of the company. Spent some time in service and parts promotion. For last two and one-half years compiler and editor of Chilton Automotive Multi-Guide featuring interchangeability of parts.

**Johnson, B. F.** (37), Box 343, Roanoke, Virginia. 13 years in truck business. 1919-21—Republic Motor Truck Co., cost and accounting division; 1922-23—branch auditor of Republic Truck Sales Corp.; 1924-25—treasurer of Myers Motor Co., Lynchburg, Va., Republic distributor; 1926-31—own retail distributorship for LaFrance-Republic trucks, Roanoke, Va. Born and reared in middle west. Will go anywhere. Prefers position as branch manager or branch auditor.

**Kerner, Martin** (39), 1008 Champlin Ave., Utica, N. Y. 10 years in truck business, selling Selden, Atlas and Dearborn trucks. Experienced in selling fire apparatus. Has had charge of truck repair shop. Desires sales or service position anywhere.

**MacGregor, W. C.**, Markle, Ind. For the past nine years with International Harvester and Gramm; previously some few years with DeLancey. Writes: "For the most part this experience was in sales work both in sales engineering and wholesale. A very definite knowledge is also mine of the technical end of truck designing. I would seriously consider a proposition in any section of the country."

**Peacock, Bert M.** (47), 700 Steiner St., San Francisco, Calif. 25 years in automotive business, 18

The Commercial Car Journal



GRIER



# WANT JOBS!

years as dealer and distributor in Fresno, Calif. Two years with Auburn Auto Co. as Pacific Coast manager; three years with Reo Motor Car Co. truck department, San Francisco; one and one-half years with Kleiber Motor Co. as assistant manager, San Francisco. Has knowledge of commercial equipment from the ½-ton unit to and including the 10-ton dual drive.

**Ransone, J. F. (39)**, Clarksburg, W. Va. 22 years in automotive business. Started with The White Co., remaining for three years at Cleveland factory and New York City branch. Afterwards with the New York City F-I-A-T Co. and then with F. B. Stearns Co., at Cleveland. For 11 years was in business of his own, distributing Chevrolet passenger cars and commercial units, and Peerless passenger cars and trucks. Last attachment was with Brockway-Indiana Truck Corp. as district manager, supervising wholesale and retail sales in West Virginia and parts of Ohio and Kentucky. Feels he would be most valuable in a wholesale division but desires affiliation with a good company regardless of the job to be done. Available upon 10 days' notice and prepared to go anywhere.

**Satterwhite, J. W. (44)**, 125 W. Commerce St., High Point, N. C. 15 years' automotive experience, nine in truck business. Has been truck salesman for following: H. G. Ilderton Motor Co., High Point, N. C., 3 years; Ben Cooper Motor Co., Shawnee, Okla., 7 mos.; Diamond T Motor Car Co., Tulsa, Okla., 8 mos.; Superior Motors, Inc., High Point, N. C., 14 mos.; Wilson Motor Co., High Point, N. C., 10 mos. Never discharged. Can furnish satisfactory references. Wants position as truck salesman, anywhere.

**Sheddan, Frank D. (47)**, 952 Foss Ave., Drexel Hill, Pa. 1914, purchasing agent for Garford-Philadelphia Co., later assistant treasurer in charge of accounting department. 1918, resigned to take charge of operation and maintenance of large fleet of trucks. 1920, city sales manager Garford-Philadelphia Co., resigning after six months to go in business for self. 1922, territory man for International Harvester. 1925, manager Trenton sub-branch of Sterling. 1930-31 on sales force of Philadelphia Sterling branch. Since

curtailment of sales force has been trying to build up a used excavating machinery business for himself, but conditions in that line are very quiet. Can furnish satisfactory references. Willing to go anywhere but prefers Philadelphia or Newark, N. J., areas.

**Smith, Harry A. (37)**, 306 Gratiot Ave., Alma, Mich. In truck business 16½ years. Two years with Grant Motor Corp., Findlay, Ohio. 14½ years with Republic Truck Co. and LaFrance-Republic Truck Co., as follows: service manager, three years; sales traveler, four years; assistant sales manager, four and one-half years; sales manager, three years. Desires position in sales department inside factory or in field. Go anywhere. Will only consider position with progressive manufacturer amply financed.

**Wright, O. L. (47)**, Hampstead, Md. Engaged in selling trucks for 21 years. Entered truck business in spring of 1911 with United States Motor Co., selling Sampson trucks; later sold Little Giant, Reo and Republic. In 1918 became manager of New York distributorship of Columbia Truck Co., and later promoted to eastern district manager. Corbitt from 1922 to 1927. General Motors Truck as wholesale representative of Baltimore branch. 1928 to 1932, The White Co., Baltimore branch, as wholesale representative. Now on indefinite furlough. Would prefer to continue in territory he is familiar with.

## Fleet Operators

**Heath, G. C. (35)**, 12130 Birwood St., Detroit, Mich. Eighteen years' truck maintenance experience in factories, service stations and private fleets in newspaper, public utility and dairy fields. Truckmaster during World War. Past seven years in charge of dairy fleet of 300 units. Fleet serviced in several garages about state under his supervision. Would especially like to take on a rundown fleet and work it up to efficient basis. Ready to locate anywhere but prefers East. References available.

## DO YOU WANT A JOB?

If you are unemployed and searching for a job, send in your application to the editor of **COMMERCIAL CAR JOURNAL**.

Include the following particulars in your application:

Name, Age, Mail Address, Number of Years in Truck Business, Experience (what companies employed by, how long and in what capacity), Availability (are you prepared to go anywhere or do you limit the distance?), Kind of Position Desired, and Remarks.

This unemployment service applies as well to fleet men.

The service is not limited to readers of **COMMERCIAL CAR JOURNAL**. If you have any unemployed friend whose experience in the truck business should prove valuable to a truck organization, tell him to send in his application.

**Lanahan, John J. (34)**, 49 W. Eagle Rd., Upper Darby, Pa. Five years with The Texas Co., New York; two years with Lee T. Ward Co., Philadelphia; three and one-half years with American Tel. & Tel., Philadelphia. Desires position as superintendent of motor vehicle maintenance and operation and can furnish references as to character, ability and experience. Ready to go anywhere but prefers Chicago or East.

**Tunberg, Harry C. (40)**, 2192 Elbur Ave., Cleveland, Ohio. Seventeen years with Nickel Plate Railroad. Three years with Motor Express, Inc., Cleveland, freight forwarders, as vice-president and general manager. Worked out general operation of Motor Express at time of consolidation. Also has considerable experience in transportation accounting. Can handle operation, both platform and road, with regard to dispatching. Interested in either operating or accounting position. Distance no matter. Prefers to show what can accomplish.

**Tepper, F. E. (30)**, 143 Kendall Blvd., Oaklyn, N. J. Upon graduating from Drexel Institute with degree of Bachelor of Science in Mechanical Engineering, entered employ of Philadelphia Rapid Transit Co. as cadet engineer. Spent year studying methods in all departments. Transferred to bus shops of Philadelphia Rural Transit Co. Left P.R.T. in 1930 to go with American Tel. & Tel. as division supervisor of motor vehicles. Prefers position with an oil company in industrial sales or with truck or tire manufacturer in commercial sales. Go anywhere. Member of S.A.E. and A.S.M.E.

## Anonymous

The following applicants requested that their identities be withheld in the publication of their qualifications. For that reason their applications are keyed. **COMMERCIAL CAR JOURNAL** will be glad to establish contact.

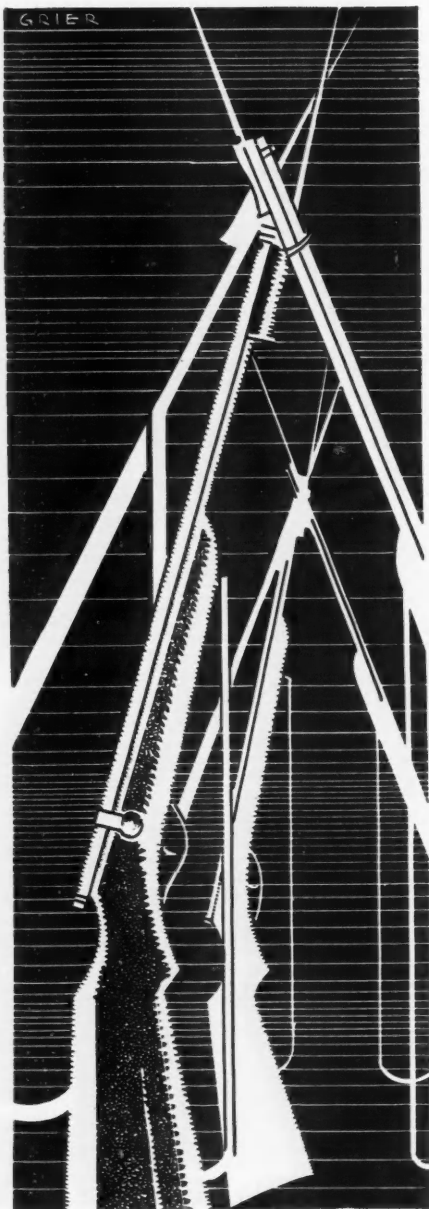
**A1**—Three and one-half years with Packard retail and wholesale truck sales. District manager in Southeast for Walker Vehicle Co. Assistant to general sales manager of Walker. Wholesale manager in Chicago for General Motors Truck. Special representative of Studebaker commercial car division covering four branches in Southeast securing and developing dealer connections. Transferred to home office, where covered Detroit and South Bend branches in similar capacity.

**A2**—1919, sold road-building machinery. 1921-24, managed agency selling cars and trucks. 1924-27, represented distributor of truck equipment items. 1928, trailer factory representative. 1929-31, factory representative six-wheel equipment central U. S. 1931 to June, 1932, national fleet owner representative, Ford Motor Co. Wishes to connect with trailer or truck manufacturer as factory representative. Understands transportation cost analysis and how to conduct sales schools. 41 years old. Willing to go any place.

**A3**—Has sold one line of trucks for 10 years as retail salesman. Available immediately and prefers metropolitan New York area. Would consider traveling position. Age, 35.

**A4**—10 years with such companies as Stearns, Locomobile, Willys-Overland and Yellow, and as chief of the Motors Branch, Domestic Distribution, Q.M.C., U.S.A., Washington, D. C. Eight years with Fageol. Can analyze and intelligently present operating costs and potential earnings of units suitable for any transportation requirement. Age, 48.

# HIGHWAY USERS UNITE TO FIGHT 1933 TAX BATTLES



Alert to Ominous Tax Intentions of 44 Budget Balancing Legislatures, Users Mobilize to Repulse Raids

By NORMAN G. SHIDLE

anced than they now are; with strenuous demands for unemployment and other types of emergency relief funds; and with a set of existing tax laws which will have failed by wide margins to produce the revenue previously expected of them.

All of which will simply act to increase the pressure for easy-to-collect taxes on the vehicle owning portion of the populace and to intensify the demand for further restriction of size, weight and load specifications of commercial units. Under the burning sun of new revenue needs, the crop of proposed legislation inimical to automotive interests may be expected to fructify more luxuriantly than ever before.

Fortunately, the users of the highways as well as the manufacturers and sellers of motor vehicles have been aroused to the coming dangers more quickly and more actively than in former prelegislative years. This depression-bred awakening is evidencing itself through widespread comments by individuals within the industry and by final organization of powerful groups of highway users into the Highway Users Conference.

It has been evident for several years that some coordinated means was needed to help promote the best interests of highway users, particularly because of the very highly concentrated and coordinated character of the groups engaged in the promotion of legislation and taxation tending toward hindrance of full economic use of the roads. The limited amount of detailed information immediately available concerning the newly organized Highway Users Conference makes difficult any full estimate of its potentialities and possibilities at the moment. The mere completion of its organization, however, is indicative of a finally aroused consciousness of unity among all highway users and thus furnishes the most important single sign of pro-highway awareness of the legis-

lative shoals which lie in the 1933 channel.

While based on gradual realization of a need which has grown greater every year for some time back, the final organization of an informal Highway Users Conference in Washington on June 28 probably came about because agricultural, industrial and private highway using groups have lately become seriously disturbed by the recent sharp increases in taxes on automotive units and on products entering into the use of motor vehicles.

The articles of organization of the new conference indicate its purpose to be that of encouraging the development of equitable bases of taxation for the use of the public highways and the prevention of the imposition of undue burdens on highway traffic.

The conference is composed of representatives of some 40 or 50 national groups or associations whose members use the highways commercially in one way or another. In addition to the automotive and allied groups such as the National Automobile Chamber of Commerce, American Automobile Association, Rubber Association, American Petroleum Institute, etc., the conference includes agricultural, industrial and vocational groups of various kinds.

The meeting which resulted in actual organization of the conference was called by Alfred J. Sloan, Jr., president, General Motors Corp., who acted as temporary chairman, and C. F. Whiting, president, International Milk Dealers Association, Boston, who functioned as chairman of the committee on procedure.

The general purposes of the conference can probably be divined best by reading of the statement made by Mr. Sloan following the organization meeting:

"To the extent that there is economic justification for taxes upon users in return for highway development," Mr. Sloan said, "no one can find much fault with them. But when we see the vehicle becoming an instrument for general taxes of all sorts far beyond those which the user should pay, then a halt must be called. Otherwise, the whole structure of our highway transportation will be menaced and the individual who uses the road will find himself saddled with operating costs which will add materially to the cost and movement of goods."

TURN TO PAGE 46, PLEASE

**T**HIRTY-FIVE governors will be inaugurated next January. Forty-four state legislatures will meet next year. A lame-duck Congress will convene in Washington next December.

In ordinary times this cacophony would bode a fine crop of new taxes, and increased restrictions on design and operation for the entire automotive industry.

But these are extraordinary times.

When the governor-inaugurating and legislature-meeting season rolls around the peoples of the states and the Nation may find their governments faced with budgets even more unbal-



# NOTES OF OPTIMISM ARE CHIRPED ON MANY SIDES

WHILE July, judging by the statements of men in the trade and not on any official registration figures, was one of the worst truck months in the last two years, reports from various parts of the country indicate that in this same month of July began an upward movement in general business. These hopeful signs made themselves apparent in numerous ways: in the advance in the price of livestock and dairy products and the continued rise in general commodity quotations; an improvement in the price level of petroleum products; reopening of or increased activity in factories that have been closed or operating on part time; the firmness of the bond market and gains in the stock exchange.

Notes of optimism are being sung on many sides. Farming conditions are almost as nearly perfect as could be desired from the viewpoint of quantity and quality of nearly every crop, with corn, oats, small grains and fruits showing excellent yields and grades. If the recent rise of prices in certain commodities spreads to the balance of the list the effect will doubtless be such a revival in business as has been looked for since the crash three years ago.

All these signs seem to support the view of many truck factory executives that when the records of the depression have been posted, July will be pointed to as the very bottom, so far as the truck industry is concerned. The seasonal lull may extend itself throughout August, but an upswing in September may confidently be expected.

Furthermore, these signs appear to indicate the need, as never before, for rolling up the sleeves and pitching enthusiastically into the task at hand.

## Price Advances, Renewed Factory Activity and Confidence in Many Lines Should Place Business on Mettle

Contacts that have been carefully nursed for months may blossom suddenly, and the man on the job will be the man who plucks the flower. It is unnecessary to point out at this time just how many contacts should be ready to blossom. Everyone in the truck business is painfully aware that hundreds of thousands of trucks are being operated which should have been off the road two years ago. Thousands of other trucks have been jacked up in garages due to lack of sufficient tonnage. But for the most part these jacked-up trucks represent obsolete equipment. Many of them will never see the highways again because they have been robbed of their most vital parts, and most of them, because of their antiquity, will be severely penalized by legislation which has been passed during the last few years.

These facts are recalled and advanced simply as evidence that the trade should not overlook any truck operator. At the moment the one, two and three-truck owner is the liveliest prospect. Operators of larger fleets, with some of their truck laid up in garages for the duration of the depression, have the "No Sale" sign hung on their doorknobs. And with reserve equipment staring them in the face, you can't blame them for their resist-

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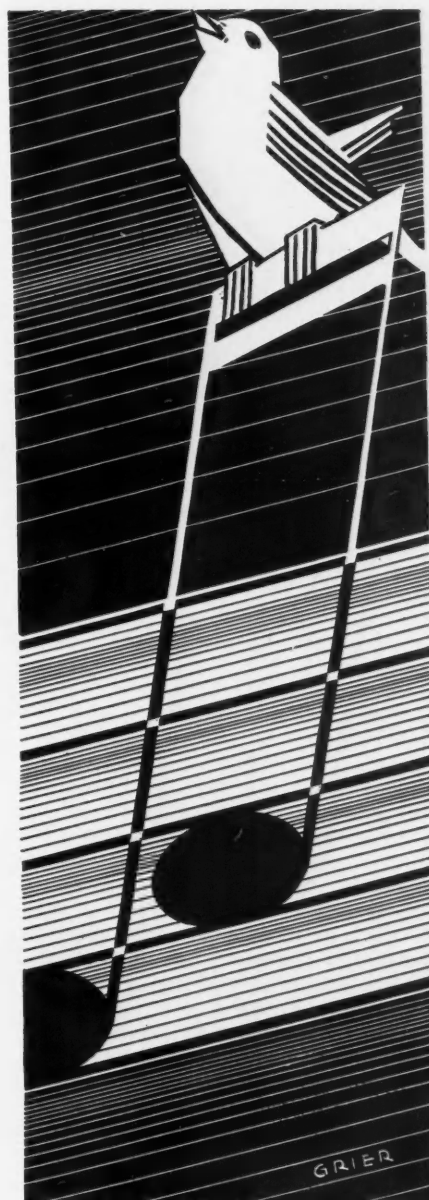


TABLE No. 1

	Domestic Sales			Foreign Sales			Total Sales			Production (U. S. & Canada)		
	1932	1931	% Loss	1932	1931	% Loss	1932	1931	% Loss	1932	1931	% Loss
January ...	14,650	24,415	-40.0	7,510	10,994	-31.7	22,160	35,409	-37.8	21,160	35,475	-40.5
February ..	14,100	23,466	-40.0	6,958	10,881	-35.9	21,058	34,347	-38.8	24,291	41,863	-41.8
March ....	17,000	30,609	-44.5	6,323	14,810	-57.3	23,323	45,415	-48.6	21,274	47,671	-55.4
1st Quar...	45,750	78,490	-41.7	20,791	36,685	-43.3	66,541	115,175	-42.3	66,725	125,009	-46.6
April .....	18,000	36,848	-52.0	2,877	15,775	-81.6	20,877	52,623	-60.3	28,539	53,138	-46.7
May .....	19,000	33,496	-43.3	5,077	10,405	-51.6	24,077	43,901	-45.2	27,480	47,805	-42.5
June .....	18,000	28,496	-36.0	3,900	12,257	-68.2	21,900	40,753	-46.2	23,558	41,496	-43.2
2nd Quar..	55,000	98,840	-44.5	11,854	38,437	-69.1	66,854	137,277	-51.3	79,577	142,439	-44.1
6 Mos. ....	100,750	177,330	-43.2	32,645	75,122	-56.6	133,395	252,452	-47.1	146,302	267,448	-45.3

# HAVE LOCAL HAULERS BEEN HANDCUFFED?

The Secretary of a Truckmen's Association Views With Alarm the Growing Plight of the Drayage Group and Suggests Ways to Remove Their Shackles

By TOM BARRY

Executive Secretary  
Merchant Truckmen's Bureau of New York

**Y**EARS ago, before we became a battle-scarred or bottle-scarred veteran of truck association work, we were hailed as a male Pollyanna—a particularly repulsive species of “glad-boy,” noted for our optimism.

In those gay years the world, to us, was a beautiful parade of rosy dawns, star-filled heavens, poetic sunsets and scented airs. Not only that, but the first low moans of business depression were but the rumblings of alarmists, and reports of legislative activity against trucks and truck owners were just a great big giggle.

Why not? Were we not secretary of the wealthiest truck owner organization in the country? Wasn't it a fact that our members were not only working out tonnage-trucking operations with railroads but, in addition, were going into long distance trucking as well? And wasn't it a further fact that shippers, country-wide, were loudly acclaiming over-road truck service and thumbing refined noses at railroads, rail service and rail rates?

All too true and more. The world was our oyster. We were allied with a great and growing industry! The rail carriers were passe; rail barons were becoming doddering old wrecks; trucks and buses were replacing trains and freight cars with enthusiastic abandon and, we reasoned, if we kept our nose to the grindstone who knew but that some day we'd be a Cabinet Member down in Washington, probably in a newly-created post of Secretary of Truck and Bus Transportation! *Oui*, most assuredly, and of a certainty, we had it all figured out. And then, as the versifier wrote:

“Came the frost—the killing frost—and when we thought, good easy man, that surely our greatness was ripening . . .” etc. Get the idea? Pollyanna began to take it on the chin along with the business of haul-

ing-for-hire. The rose-dawn of a new era began to get a little cloudy. Evolution began putting a red light on the track for Boozer Brown, not necessarily us, y'understand, but for truck owners who had begun to enjoy the hauling bonanza in a large manner. Let us see what dat ol' davvil evolution did to the New York picture—and as New York goes, so goes the motor transport nation, with some reservations:

First, we had the Erie Railroad launch its inland station operation, which gave to one trucking company a virtual monopoly on carload freight coming over its line. This because freight was broken out at rail head in New Jersey, trucked to “atmospheric station” in Manhattan where a “presumed” delivery was made, and then hauled to either store-door of consignee, or trucked to warehouses owned by the Erie Railroad's agent. In that the railroad, in effect, subsidized the freight haul to the point of “atmospheric” delivery, the trucking contractor could haul to store door of consignee for less than the non-contracting truckmen could haul from inland station to store-door. So, with this rate competition—with these reduced trucking rates, local, non-contracting truckmen had to reduce their general rates for hauling, or else . . . The old underworld expression, “Or else.”

The operation of the Erie Railroad, because of lower haulage costs in Manhattan and a modified form of store-door-delivery, caused the other roads to lose tonnage. Whereupon, after profound and lengthy conferences, a new form of truck service was evolved, rejoicing in the name of “Trucking-in-lieu-of-lighterage.” The New York Central was the father of this plan, and had it sold to them by a New York truckman, who was also a very

What Might Be Done to Free the Local Freight Hauler From His Shackles

1. Local truckmen, in cities of the first class, might try to bring about mergers of small trucking firms, or medium-sized firms, and then sell to the railroads the idea of the new corporation taking over possible store-door delivery operations in preference to having the railroads turn over this project to the Railway Express Agency.

2. Failing in this, local truckmen might seek to contract with the Railway Express Company for the performance of store-door-delivery.

3. Local truckmen might seek to develop new forms of rail-trucking contacts and contracts, so that at least some percentage of available freight will continue to be controlled by truckmen themselves.

4. Zone tariffs, rigidly adhered to, might be drawn up and distributed by local truckmen so that trucking may be stabilized and trucking rates controlled.

5. Terminal operations for over-road haulers might be developed, and these terminals be located outside the cities in less congested thoroughfares.

6. Competing over-road truck lines might be merged into a number of well-financed companies, into efficient companies, the rates of which will be controlled by some medium other than the Interstate Commerce Commission.

7. From merged over-road carriers a Contact Board might be set up to contact with high railroad officials and thus seek to put an end to the rail-truck warfare.

8. Efforts might be made to interest big shippers in the financing of mergers of over-road truck lines to the end that their influence, their tonnage, their prestige, may aid in halting the rail-truck insurrection.

9. Over-road operators might make contractual relations for store-door-delivery with local truckmen instead of making such deliveries themselves, and in this way make allies of local haulers instead of enemies.

10. A nation-wide organization of truck owners, shippers and interests allied to trucking might be set up for the protection of truck owners, and this organization be divorced from passenger car interests, ad nauseum, the organization to be financed by the owners themselves, the shippers, those manufacturing products having to do with motor transport, and private carriers whose truck operations will presently be threatened.

bright young man. He was so bright that a few months after the plan started, the Port of New York was thrown into an uproar by one of the most intense rail-freight wars, and trucking wars, Peter Stuyvesant's former playground had yet beheld.

In execution the plan was simple.





Some fifty truckmen were placed upon the New York Central's "preferred list" and were given contracts for "trucking-in-lieu-of-lighterage." Under the terms of the plan almost everywhere was a lighterage point, irrespective of whether there was any water within twenty miles or not. Thus, the

truckmen who had contracts took the freight from cars, hauled it to a given point, and collected from the railroad for "trucking-in-lieu-of-lighterage," after which they made store-door-delivery for anything they could get. The Interstate Commerce Commission became indignant with the plan when

it was discovered the truckmen, in some instances, WERE ACTUALLY PAYING THE CONSIGNEE FOR THE PRIVILEGE OF DELIVERING HIS FREIGHT, notably in the case of carloads of flour.

Prior to the I.C.C.'s ordering the plan discontinued, the Baltimore & Ohio, D. L. & W., Jersey Central, Lehigh Valley, Pennsylvania and all other trunk lines had either adopted the "trucking-in-lieu-of-lighterage" plan, had improved on it, or dug up some trick truck delivery plan of their own. And, in the interval, shippers and consignees had become accustomed to paying a few cents a hundred for delivery of their freight, or else had become used to not paying anything at all.

Continuing with this transportation evolution, the water carriers, losing business, began to evolve a few delivery systems on their own account, all of which reduced trucking charges to consignees by giving truckmen under contract with them liberal allowances for hauling hither and yon, both with and without provocation. Terminals were set up by truckmen in all manner of places; terminal allowances were given; lighterage allowances were thrust upon surprised draymen and, altogether, a good time was had by all except the competing lines which were slow on the subsidization draw. In the meantime normal cartage rates, without subsidization, took on all the appearances of the writer's bank balance, which is very low indeed—in fact, nothing could be lower.

Next in line in the evolution parade was the carloading companies, railroad owned—after a bit. The carloading companies decided they were being shanghaied out of the picture, and promptly contracted with trucking companies to give shippers free pick-up and delivery of freight if the shipment were of sufficient volume to make carrying the tonnage interesting. All of which hammered down hauling rates some more. Of course widespread subsidization couldn't last. Scarcely anything does, as a matter of fact, and the subsidization program, although a much disliked term, was too raw and too expensive for the carriers to survive it indefinitely. And presently, allowances, *all allowances*, save those paid by the Erie Railroad to its contractor, were withdrawn, and the railroads blandly told their truckmen to pick up where they had left off on the premise that trucking was wagging the railroad tail, a most unhappy custom—for the railroads.

Truckmen, city-wide, picked themselves up, brushed themselves off, and went beaming to their merchants to make known the low cartage racket was through, washed up, adding they would have to have higher rates, old pal, old pal. The shippers regarded them coldly; gazed upon them with infinite disdain; inquired how they got that way, and allowed as how if they emphasized rates too much they would ship over-the-road, by truck, having

heard favorable reports about the method. The local truckmen waxed facetious. Who ever heard, they asked, of sending trucks 300 and 400 miles over the road? Maybe, they held, such funny stuff might work out in states where traffic congestion wasn't heavy; where railroads inadequately served outlying territories; where climatic conditions permitted of uninterrupted operation—but, to try that over-the-road stuff in the eastern states, even in the southern states, that was one grand joke. Truckmen held their sides and told the "hot story" to local railroad solicitors.

Running true to form, the railroad freight-grabbers joined in the merry laughter. All hands repaired to Gus's place and hoisted a few bee-jeers, burping elegantly from behind toil-worn hands. That over-road business was a good one, it was. W-e-l-l, let those high-falutin' shippers try it, and see where they got off. They'll come back and be glad to tie-up with the good ol' railroads and the better ol' local haulers. Whereupon tonnage folded its tents like the well-known Arabs, and silently stole away. Before you could say, "Who steals my purse, steals trash; 'tis something, nothing," the local truckmen found their vehicles resting serenely in garages, and an average of 1800 trucks a day coming through the Holland Tunnels from all manner of places, all loaded to the "gunnels" with freight.

### Straw-Clutching Hysteria

Local truckmen began to look pained. Local truckmen held conferences. Local truckmen lowered their pier-to-store door rates anew. They began to cut each other's throats in a vastly impious manner, letting the shipper name his rates and renewing, at the same time, a union contract which provides drivers of 7½-ton trucks shall receive \$47.50 a week, with time and one-half for overtime, beginning after the eighth hour worked, to say nothing of pay for 10 holidays in the year, and double time if men worked on holidays.

Similarly, public loaders on the piers who, presumably, are there for the "convenience" of truck owners, but who quaintly refuse to permit you to load your own truck with your own union men if you feel like it, decided that, because of lost revenue caused by decreased tonnage, they might just as well increase their rates from three cents to four cents a hundred. So operating costs went up; revenue from cartage went down. And millions in tonnage were, and are, being lost to the local truckmen by the operations of over-the-road men.

What to do? What to do? The local truckmen thought long and hard. At length many of them decided that they'd get into this over-the-road business and save their tonnage, lost to the rails, and thus lost to them. But, by that time over-road haulers had begun rate wars of their own and the

local beginners found, to their horror and surprise, that if they wished to compete with existing long distance hauling lines, they would have to haul long distances for lower rates than they received for purely local hauling from piers to consignee's door. For example:

### More Straw-Clutching

A rate for hauling freight between New York and Philadelphia of 12 cents a hundredweight. A rate of 20 cents a hundredweight between New York and Baltimore. A rate of 68 cents for hauling between New York and Akron, Ohio. The local truckmen shuddered, grew pale, but plunged in anyhow and immediately ran into all kinds of trouble. To begin with, one of the big carloading companies, with a view to meeting truck competition, took freight off the rails and sent it over the road at rates which were lower than those at which established long distance haulers could afford to carry it. Again, railroad companies, getting panicky at the loss of tonnage, had bought up a number of truck lines and, operating them as subsidiaries, had undertaken to administer a sound shellacking to competing over-road companies whose routes paralleled railroad tracks. Finally, water carriers, desperate at lack of tonnage, had similarly bought up truck lines and had launched forwarding companies well equipped to lose money, but bent on getting back lost freight. Then, in conclusion, railroad and water carrier companies had sent armies of lobbyists into the state capitols of every state in the union, bent on getting regulatory truck legislation and increased truck tax measures passed. In this way they were backed by railroad employees, security holders, insurance companies, Wall Street, and friendly legislators. The local truckman recoiled sharply from the composite picture in front of him. He was helpless, and he knew it.

### The Ugly "Truckling"

It should not be necessary for the writer to set down, for the information of the well-informed executive engaged in manufacturing or selling products having to do with motor transport, or for fleet owners either, just what has happened in the last legislative year which threatens the future of the truck operator, country-wide. Suffice it to say, and we can prove it, that adverse truck legislation appeared on the statute books of nearly every state in the union, with the possible exception of New Jersey. In addition, the United States Supreme Court has upheld adverse decisions rendered against trucks by lower courts, state regulatory bodies, tax commissions and your Aunt Minnie. Every day, in every way, truck operation, local and over-road, becomes tougher and tougher, with rail carriers calling upon every resource they possess to halt the flood of the

trucking tide, and don't let anybody tell you they haven't been able to do it. And the carriers are only beginning!

In contrast to the activities of the railroads, on homicide bent, what weapons have the truck owners of the country to combat such efforts? Very few. One can count, on the fingers of one's hand, not hands, the number of self-supporting user organizations able to make a dent in the armor of hostile legislatures. There is no national organization extant which can even attempt to do battle with the powerful railroad interests who, at the present time, are borrowing lavishly from the Reconstruction Finance Corporation. There is little unanimity between local truckmen and their over-road brudders. Frankly, the local truckmen, in New York at least, would be charmed if the over-road haulers were legislated off the roads because they feel if this were done, freight would return to the rails and thus to them—for local delivery—even though at ruinous rates. And their own experience in over-road hauling seems to convince them that unless rates are regulated, money cannot be made in this type of motor transport.

### Loving Seduction

The one note of hope experienced by New York truckmen and by truckmen in other cities, we imagine, is the sudden burst of interest and affection which local offices of railroads are manifesting towards the lowly cartage man. In column of squads freight agents are hunting up the local haulers and singing a siren song of "mutual interests" to them. The song goes like this:

"Hello, Jim, how yuh been, Jim? Lousy, huh, Jim? Same with us, Jimmy ol' boy. These over-road trucks are playin' hell with the railroads. It ain't right, Jim. There oughta be a law, and there will be plenty of 'em soon, eh, Jim? Yeah, we got 'em on the run, Jim. It won't be long now, Jim. Just another little while. And in the meantime I think you and me could be of service to each other, Jim. Here's how:

"If you find that you're losing business to over-road trucks and you must be, Jim, just get in touch with us. We'll see if we can't stick in truck-competitive rates with the I.C.C., and fix things up so we can hold the tonnage. Or else we'll put the freight in some other classification, see Jim? We gotta stick together, Jimmy, ol' pal, ol' pal. We have a lot in common. Just notify us if you lose tonnage or if you—ah, er, know where any nice tonnage is moving by truck, and we'll . . . get me, Jim?"

And, perchance, if Jim is a cynic at heart and says to the freight agent or solicitor:

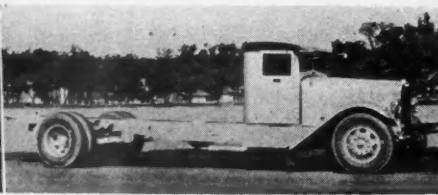
"Listen, Mr. Black, what's this I hear about the Railway Express Agency going to perform store-door-delivery in New York and the rest of

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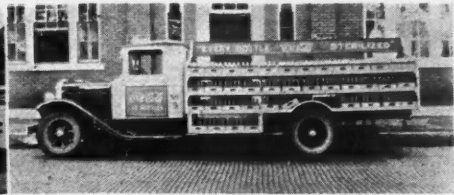




General moving and hauling



Ward La France chassis



Mack body—beverage delivery

# ALUMINUM HANDS 28 BODIES 70,000 LB. EXTRA PAYLOAD

Gross Weight Restrictions and Heavy Commercial Vehicle Taxes Focus Increasing Attention on Lighter Body and Chassis Design

Analysis Showing Weight Saved in Recently Built Aluminum Truck Bodies and Tanks

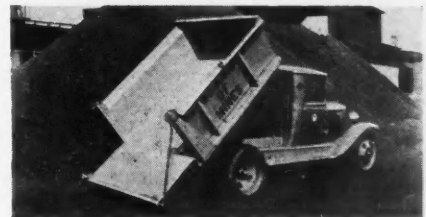
MANUFACTURERS	VOCATION	Aluminum Application	Weight Aluminum Body (lb.)	Weight Other Material (lb.)	Weight Saved by Aluminum (lb.)	Per cent Saved
<b>BODIES</b>						
The Leonhardt Co. Baltimore	Moving	All	5075	9500	4425	46
The Leonhardt Co. Baltimore	Moving	All	5075	8575	3500	41
Alabama Truck Equipment Co. Birmingham	Beverage	All	550	1650	1100	67
Wengler Co. Pittsburgh, Pa.	Meat	All	2200	5000	2800	56
Auto Truck Equipment Co. Pittsburgh	Bakery	All	1870	3470	1600	46
Olesen Body Works Chicago	Grocery	All	2425	5250	2825	54
Auto Truck Equipment Co. Pittsburgh	Meat	All, except floor	880	2400	1520	63
Fitz-Gibbon & Crisp Trenton, N. J.	Coke	All, except chutes	2450	5290	2840	54
Weicker Transportation Co. Denver	Refrig.	All	4200	7500	3300	44
Davis Mfg. Co. Cincinnati	Transport Gasoline	All	7100	10,000	2900	30
Wood Hydraulic Hoist, Detroit	Coal	All	620	1200	580	48
Wood Hydraulic Hoist, Detroit	Coal	All except rivets and hoist	1420	3320	1900	57
California Motor Coach Oakland, Calif.	Milk	All	2600	6000	3400	57
Maday Body Co., Buffalo	Transport	All, except floor	2500	4500	2000	45
Standard Steel Works, Kansas City, Mo.	Gasoline	All, except bolsters	4665	9500	4835	51
Standard Steel Wks., Kansas City, Mo.	Gasoline	All, except bolsters	4120	7850	3730	48
Standard Steel Works, Kansas City, Mo.	Gasoline	All, except bolsters	4127	7080	2953	42
Standard Steel Wks., Kansas City, Mo.	Gasoline	All, except bolsters	4130	7080	2950	42
Standard Steel Wks., Kansas City, Mo.	Milk	All	1450	3200	1750	55
Heil Company, Milwaukee	Coke & Coal	All	2650	4250	1600	40
Highway Trailer Co. Edgerton, Wis.	Meat	All	3180	5642	2462	44
Heil Company, Milwaukee	Coke & Coal	All	1895	3800	1905	50
Heil Company, Milwaukee	Coal	All	920	2380	1460	61
L. O. Koven Co. Jersey City, N. J.	Syrup	All, except lagging	3780	5720	1940	65
Fitz-Gibbon & Crisp Trenton, N. J.	Coke	All, except chute	3300	6800	3500	51
Grumann Eng. Corp. Valley Stream, L. I., N.Y.	Freight	All	1200	2400	1200	50
Grumann Eng. Corp. Valley Stream, L. I., N.Y.	Freight	All, except floor back of drop	2650	5400	2750	51
Mack Motor Corp. New York City	Transport	All, except floor and slats	3400	5400	2000	37
<b>TOTALS</b>			80,432	150,157	69,725	Avg. 47
<b>TRUCK CHASSIS</b>						
Fageol Motors Co. Oakland, Calif.	Various	All, except wheels axles & 3 springs	9480	12,375	2895	23
Ward La France Co. Elmira, N.Y.	Transport	Frame, cab, cowl, fenders & body	9800	12,200	1423	12

By MARTIN J. KOITZSCH

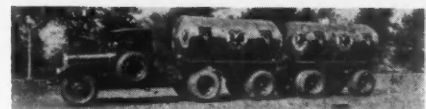
THE use of aluminum alloys in the construction of trucks has steadily increased since the introduction six years ago of commercial shapes and plates especially designed for this purpose. The present period of business depression with its downward trend in prices has proved no exception. Truck operators and owners have been faced with the problem of reducing the cost of operation and maintenance and ton-mile costs cannot be effectively reduced by hauling excessive dead weight, nor through the use of materials which require frequent maintenance. The adoption of severe highway restrictions in several of the states and the imposition of heavy motor vehicle taxes in which weight is a determining factor have also intensified the importance of a light metal in not only body but chassis construction.

A survey of the operators of some of the recently built strong aluminum alloy truck bodies and tanks has revealed many interesting conclusions with regard to the use of this material. This survey also included two truck manufacturers who have produced chassis in which aluminum was used for a great many parts.

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Wood—coal transport



Heil—milk transport



# STORE-DOOR DELIVERY PLAN WORRIES NEW YORK TRUCKMEN



LITERALLY, figuratively, actually, to all intents and purposes, or any other way you care to express it, New York City truckmen have been throwing all varieties of epileptic fits ever since the trunk line railroads entering the Port of New York announced at a private hearing on July 11 that a store-door delivery service would be inaugurated on Sept. 15. The service will apply on carload freight and will be optional with the shipper.

At the hearing, held before Vice-Chairman Lawrence, of the Trunk Line Association, the statement was made that the railroads are collecting information to the end of ultimately adopting an l.c.l. pickup and delivery service in the metropolis.

The New York store-door announcement applying to carload freight followed on the heels of the store-door service applying to l.c.l. freight which was inaugurated between Philadel-

Is Applicable on Carload Lots and Effective Sept. 15. Truckmen Submit Proposals to Safeguard Their Interests

phia and Camden and several seashore points on June 25, and which was described in the July issue of this publication.

The frenzy into which the announcement threw New York truckmen was natural in view of the fact that there was a quite general suspicion the railroads would tie up the store-door service with the Railway Express Agency, as was done in the Philadelphia-seashore service. Moreover, it is a generally accepted belief that the railroads in cooperation with the Railway Express Agency have formulated store-door plans covering every large city in the country. It is proper, hence, to suppose that wherever possible and to as large an extent as possible, the railroads will throw the trucking part of their New York store-door service to the Railway Express Agency, which is crying for tonnage just as much as independent truckmen.

It is not strange then that truckmen are trying to assure themselves of some form of protection. As a matter of fact, the highlight of the hearing on July 11 was a presentation of Fred O. Nelson, Jr., of the Merchant Truckmen's Bureau of New York, wherein he pleaded with the carriers to utilize existing equipment of truck owners, offered the services of the bureau and its members in working out details for and with the railroads, and ended up by asking permission to submit a plan on behalf of the bureau and the truckmen which would serve to safeguard the rights of all and which would result in economies to both the railroads and shippers. Permission was granted and on Aug. 1 the Bureau forwarded a memorandum.

The memorandum submitted to the Trunk Line Association and members of the Freight Traffic Managers' Committee of the Trunk Line Railroads included a suggested plan and an alternative suggestion. The suggested plan, condensed, follows:

"Our suggestion is that the roads adopt an optional railroad delivery and receipt for carload freight with the idea of gradually extending it and eventually doing away with pier stations. Then pass along

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# FACTORY EXECUTIVES DRAW A LINE ON TRUCK RENTALS

Hold Idea Sound If Handled by Exceptional Dealers. See in it Dangerous Pitfalls for Average Truck Merchant

By GEORGE T. HOOK

**T**HE rental of trucks to users by truck dealers is all right if handled by exceptional dealers. But for the average dealer, the rental set-up possesses dangerous pitfalls.

This, briefly, is the opinion of factory sales executives who responded to *COMMERCIAL CAR JOURNAL*'s request for comments on the article "I Wish I'd Rented Trucks Years Ago" in the June issue. This article described the details of the successful truck rental plan of DeLisser Motors, Inc., of New York City.

The thorough and lengthy manner in which the factory executives discussed the truck rental idea as revealed in the DeLisser article gave proof that they have been watching, studying and forming opinions on this dealer merchandising development. For obvious reasons the executives, while expressing themselves frankly, expressed a wish that their names be not connected with their statements. This privilege was accorded them as an inducement to speak candidly on the following questions: Is the truck rental idea sound enough to warrant adoption by other dealers? Is it unsound? What are its limitations? What are its desirable features?

In approaching the question of adoption by other dealers, several of the sales executives hurriedly placed Horace E. DeLisser, president of DeLisser Motors, in the class of exceptional dealers. "He has," said one, "rather uncanny ability in picking capable men to handle the various departments of his business." And another: "I happen to know this gentleman and the way he operates, he could sell mouth organs to a deaf man or Palm Beach suits at the North Pole." In the hands of such a dealer, all of the executives admitted, the truck rental idea becomes sound. "So far as the capable dealer is con-

cerned," said one factory man, "the rental plan is sound. But for the majority of dealers it is unsound for the reason that they would attempt to run it as a one-man organization and group it so that no one would be responsible. This would be disastrous as the rental operation has to be set up entirely separate and be self-maintaining. Capable personnel should handle it together with a substantial financial set-up."

Concurring in this viewpoint, another executive said: "As a general thing, I do not believe that the rental of trucks by dealers is very sound, though I do believe that in some large centers, light-duty trucks could profitably be put out on a rental basis. If the dealers were to set up a separate corporation, as did Mr. DeLisser, whereby he was working for and expecting a profit out of the sale of the truck, and also out of the operation





of the truck, then I believe the scheme to be sound. Unfortunately, there are not many dealers in large enough towns to go into this on a size scale as did Mr. DeLisser." And he followed this opinion with an alternative suggestion applying to dealers in general: "I believe it is easier in most cases for a dealer to develop a good hauler to do the rental work. Since the dealer, theoretically, has the lowest operating cost chassis, it should be just as easy to sell to this hauler as it is to sell to himself, for if the hauler were watching his costs, he would be forced to buy the truck that ran for the least money." This contact, therefore, would be of such a type that the dealer would be sure of 100 per cent of the business.

The president of one truck company speculated on still another possible development of the truck rental plan. "I am not so sure," he wrote, "whether the present-day dealer is the individual to work out a truck rental proposition or whether this should be done through a branch system controlled by a central system. I do not believe long distance control would work out profitably. There may be in the making," he concluded, giving his speculation full rein, "a new method of truck service or truck ownership, the truck being owned by some large corporation and rented out to the users of small fleets, but I believe it has got to be very well organized and handled by a company with considerable finance."

Arguing the point that the average dealer is not fitted to engage in truck rental operations, another executive declared: "It is a business in which the average dealer should not, in any way, become interested, unless the dealer intends to become solely a truck service operator and give up his dealer franchise as a new truck merchant. Most dealers' operations require their entire time, energy and capital to conduct a strictly sales business. Truck rental service business would require, if successful, the constant time of its management to prevent the many leaks which are ever prevalent."

### Gradual Development

Even under capable management there are definite limitations to the rental idea. The common viewpoint was well expressed by one sales head. "A truck rental operation," he argued, "can grow to a point where the financial structure of the thing will have too great a requirement. Building it up gradually, making it pay out over a period of time, seems to be the best procedure and more or less fundamentally sound. Advancing rental business by leaps and bounds to enormous fleets is very dangerous, even for the exceptional outfit. It should be a gradual process and should have very definite limitations.

"In building up a rental company, trucks have to pay their way. If a one-truck rental contract fell through in three months it would not be a serious matter to place that one truck. But if the contract involved 10 or more trucks, particularly trucks with special bodies, it would be a serious thing for any rental company. The rental company would have to have a considerable reserve to take care of such a contingency."

Two executives pointed out some desirable features of rental set-ups.

"There is no doubt," said one, "but what the truck salesman is given an additional implement with which to work when he can back up his sales talk with the statement that if the prospect does not care to buy a truck on the basis of the cost figures shown him, that he may rent one from this salesman's company, the rental proposition having as its basis the same cost figures. This certainly takes the possible bunk out of any figures the salesman might be using and I should think would result in a number of chassis sales."

### Has Definite Place

"There is a tendency," said the other, "on the part of a lot of individual operators and some merchants who have requirements for several units today to be rid of all responsibility in connection with motor equipment. The rental proposition, therefore, has a very definite part in today's delivery program."

It was a general opinion that a truck rental operation should be conducted on an ethical plane. There is a danger of its becoming unethical if no care is exercised in the choice of accounts. The proper course of conduct was indicated by a factory sales manager in these wise words:

"Truck rental should not be overdone by dealers to the extent of making it an operation that is directly competitive with trucking-for-hire operators in general. It should be sold as a service to merchants who do not want the responsibility of truck equipment. It should be more or less confined to vocations that have requirements of a special nature. Dealers should by all means refrain from soliciting accounts that might be handled by a general trucker."

The head of a factory indicated the sound need for a truck rental set-up under favorable circumstances, when he labeled the inefficiency of truck operation by the average truck operator in this humorous fashion: "It is no great criticism of the average truck owner to say he is inefficient because he doesn't know what it is all about anyway. He finds a hole in which to pour the gasoline, another hole in which to pour the water, sits a man on the seat and away he goes, trusting to the good Lord that he will get back."

## Have Local Haulers Been Handcuffed?

CONTINUED FROM PAGE 20

the country, leaving the local truckmen out and all?" Mr. Black invariably responds, as a number of Mr. Blacks have responded to us:

"Don't give that a thought, Jim. Just a lot of newspaper notoriety. Don't mean a thing. Forget it. How about a little lunch?"

"Give it a thought" or no, the fact remains the railroads haven't made the local truckmen feel any better by their announcement of July 11, when they made known, through D. T. Lawrence, vice-chairman of the Trunk Line Association, that effective as of Sept. 15, the carriers would inaugurate optional store-door delivery and pick-up service on carload freight in the Port of New York.

As will be set forth elsewhere in this most estimable journal, the carriers propose to "inaugurate this service as a result of repeated requests by shippers for the past fifteen years," and they hope to "bring about some economies in carrier operating expenses as well as giving a convenient and up-to-date service to consignees and consignors." The fact that shippers have already given the promulgated trucking rates under the store-door plan the polite equivalent of the "Bronx bird," doesn't seem to have registered with the rail barons to date. Their attitude seems to be:

### The Bronx Warble

"Don't get excited, worthy fellas—you asked for store-door delivery and we're giving it to you. If the rates for trucking seem high to you, tsk, tsk, just regard them as 'experimental in character, and perhaps subject to revision.' And, as to you truckmen clamoring for trucking contracts with us—as to the plan you have submitted which, you say, will protect everybody's interest, just continue massaging your hair shirts and maybe everything will come out all right. Be calm, be placid. *Le bon temps viendra* or, if you've mislaid your 'French in 146 Easy Lessons,' 'The good time will come.'"

All of which means what? It means that the truckmen of New York view with more than alarm their business and industrial future. Fully 50 per cent, or more, of their trucks are idle. Less than half of their men are working. They are not receiving one-quarter of the tonnage they received a few years back. Some of it was lost to depression. A greater percentage, however, has been lost to over-road trucks and carloading companies. The freight they are riding is being hauled at pre-war rates, at which they cannot possibly show a profit, or even make expenses. They are looking longingly at other ways of making a living—the only drawbacks are, what to do about their big investment in equipment, and how to get a job doing

TURN TO PAGE 32, PLEASE





## Our Own Ear to the Ground Department

### Tune in on This

We have listened to much whispering about the intention of one leading truck manufacturer to bring out a half-ton truck. The latest report recorded by our ear drums is that an announcement will be made in 60 days. The price (hold on to your hat) will be around \$450. Bear in mind this is going to be a truck chassis.

### This Breaks the Ice

Gramm Motors and Gotfredson are reported to have adopted the 6-cylinder Cummins-Diesel engine. The Indiana Motors adoption is noted elsewhere in this issue.

### Parts Plant Plans

One of the transmission plants specializing largely in truck transmissions is going to have something really new to offer to manufacturers and it won't be long either. Some of them have already seen an earlier development of it, but it's the latest edition which clicks with us.

### Free Wheeling for Trucks?

The idea came from the passenger car field. You probably have your own ideas about free wheeling—we have ours, but there's one thing it did for passenger cars and that was easy shifting. And that's something that hasn't been any too common in the truck field, especially when you get up among the five, seven, and 12-speed gearboxes.

### Well, Yes and No

Free wheeling or coasting in a truck of this size wouldn't be so hot, it is our candid opinion, and evidently also that of the parts manufacturer. What he has done in this new wrinkle is to provide the same ease of gearshifting for a truck that you get in a free-wheeling passenger car, but without the free wheeling.

### Won't Be Long Now

We have a hunch that we'll be able to tell you about it in the September issue, but we're not making any promises.

### Do You Inhale?

The advertising account of one of the big producers of trucks is going to switch back to an agency that had it a number of years ago, from all reports. However, some of the men now handling that account will probably go with it, so there's nothing much to get worried about, even if one were inclined to do a little.

### Doubling Up in Engines

Two-cycle engines are now getting a big hand by the undercover boys in the passenger car engineering departments. Light weight, of course, is the real reason. For a light delivery job it might also have promise for the same reason.

### And in Chassis Too

One of the biggest builders of passenger cars and trucks is playing around with a combination unit which vacuums both the clutch and the brakes in booster form. They found out it cost practically nothing more to do both than to do either.

### No Referee to Count 14

There's one thing the Trailer Manufacturers Association, now being

formed, is going to be asked to do, and that is to standardize fifth wheel hookups for trailer-tractors. There probably will be plenty of opposition, but some of the people back of the move are also itching for a good knock-down and drag-out.

### Spark Plug Diesels

Compression ratios are going up in experimental departments. If Diesels don't come in before five years at the present rate, we'll have them anyway. Eight to one ratios are the order of the day now behind the scenes. Seven to one is only child's play. And in at least one plant there's a gasoline engine with spark plugs and everything with 10 to 1 compression. Diesels, in case you've forgotten, run around 16 to 1.

### Watson, the Needle

Needle bearings have been coming strong in passenger cars lately, mainly in universal joints. No lubrication in service. The bearings are little rollers which bear directly against the pins of the trunnion—no race or anything. Some truck manufacturers are interested.—A. F. D.

## THE OVERLOAD

### We Attend a Hearing

We attended a hearing the other day called by the Ways and Means Committee of the Pennsylvania House of Representatives on bills designed to reduce weights, increase fees and limit reciprocity. We went merely to observe what goes on at a hearing.

### Pickling and Pocketbooks

The complaints of the trucking interests must have been satisfactory because the committee pickled all bills but the one relating to reciprocity. The pickling pleased us, naturally, even though we felt at the time that the truckmen weren't telling the story they could have told. The quickest way to win the sympathy of a legislative body is to show what effect a bill will have upon its constituency—the public-at-large—the voters. The statements should not be confined to general predictions that legislation will result in increased costs which must be passed on to the public. The most effective testimony would be: This legislation is going to cost the public 1 cent more for every loaf of bread; a half a cent more for every gallon of gasoline; 5 cents more for every gallon of ice cream, etc., etc. In other words, the appeal, by all means, should be to the public's pocketbook.

### Railroaders Are Just Sissies

Although the House chamber was packed with truckmen and railroad sympathizers in about equal numbers, the truckmen's applause seemed to be the louder. There's only one way we can account for this; the truckmen's hands must be more calloused.

### Why Not Guelph or Ghibbeline?

One trombone-voiced witness favoring the legislation against trucks referred to the heavy-duty jobs as "behemoths." A railroad brotherhood representative imitated him badly when he referred to the same behemoths as "Huguenots."

### What Was HE Driving?

One gentleman, representing (as we got it) the Highway Department of the Pennsylvania Chamber of Commerce, favored the restrictive and burdensome legislation in irate tones that could have been heard "in every Middlesex village and town." The sole premise on which he based his vitriolic support was that it had taken him an hour to pass a tractor and trailer coming over the Pocono Mountains.

### Hi There, "Ass'n Secs"

This man's speech, we contend, if placed on a phonograph record would quickly swell the membership lists of truck associations. The only equipment a membership solicitor would need would be one of the records and a portable phonograph. We'd guarantee a signature on the dotted line after one hearing of the speech. In fact the solicitor's chief job would be to prevent the operator from smashing the record.

### Velll Velll Velll

We found at least one politician who doesn't think much of the truckmen's vote. This man, representing a Pennsylvania Dutch county, or else accents don't mean anything, was heard to remark: "Ve can't depend on the truckmen. Ven election time comes they are on their trucks in the country somever. They are too busy to wote."

### "Lucky" Loomis

The accident in which Ed Loomis (N.A.C.C. truck division secretary) sustained a pair of fractured legs is a horrifying experience to listen to. His many friends will be interested in the following particulars we picked up: Ed was pinned in the wrecked car 45 minutes before he could be pried loose. The right leg sustained a clean fracture. The left leg, from below the knee to above the ankle, was crushed to a pulp. In consultation a group of doctors advised that the left leg be amputated immediately. The doctor in charge dissented and took a chance. As a result Ed will have a silver-plated leg. Ed's Packard was wrecked so badly it isn't worth a nickel. The spot where Ed crashed is being investigated as an accident breeder. Ed's letters are cheerful. We suspect he's got a red-headed night nurse.

### This Should Make You Foam

Up in Canada the National Breweries, Ltd., Montreal, refers to its beer trucks as "Chariots of Commerce." Whoa, boy! Trucks are painted yellow, green and red. If you see a yellow job you know it's loaded with Frontenac; spot a green and you may be sure it's hauling Dawes' Black Horse. A red chariot marks the wet goods as Dow's Old Stock Ale. Whoa, boy!

### On Both Cheeks, Too

"Hidden Values" is the title of an educational pamphlet put out by The White Co. It represents a splendid idea. By means of cutaway views of vital units it illustrates the features of design which are visible only to a prying eye. The sales organization should kiss Robert Cass, engineering secretary, for this excellent piece of instructive literature.

### And Some of the Same for Fred

And International Harvester deserves a great big hand for its comprehensive loose-leaf book "Interpretations of State Restrictions on Motor Vehicle Sizes and Weights for Each of the United States of America." That's quite a title, but then it's quite a book. It has been approximately two years in compilation. Fred Lautzenhiser, transportation engineer, writes us, "and it has been rather a difficult task to persuade some qualified state officials to approve the various interpretations." The revisions will be kept up to date as state laws and interpretations are changed. Our opinion of the book is that it's a darned hard job darned well done.

### It's Still a Good Word

We never cease wondering why the term "Truckportation"—terminology, naturally, for shipping by truck—did not become fixed in the industry. Goodyear Tire & Rubber Co. originated it back in 1920. Maybe the fear of imitation harmed the cause. Anyway, Truckportation deserves a better fate.—G. T. H.

This is the seventh installment of a series on Motor Carrier Problems

**M**OTOR freight transportation companies are responsible in varying degrees for the protection of the goods entrusted to them for transportation according to the nature of the service performed as a contract or as a common carrier. Contract carriers who are engaged in the transportation of goods for a limited number of patrons and who do not hold themselves out to carry goods for the general public may within reasonable limits limit their liability for the loss, damage or delay of goods entrusted to their care by terms of contracts which are mutually understood or agreed upon by the carriers and their patrons. The terms of the contractual definitions of contract carrier liability are subject to almost infinite variation according to the mutually expressed and understood agreements between the carriers and the owners of the goods.

The liability of motor transportation companies engaged as common carriers in transportation of property of others for hire is another and a much more complicated matter. It is of such vital importance to the motor transportation industry that a clear understanding of the basis of liability and the legal means of defining and limiting liability is necessary in successful motor freight transportation, operation and management.

In the absence of federal legislation upon the subject of motor carrier regulation, the liability of motor carriers for the safe carriage of goods is governed either by the general principles of common law, common carrier liability, as developed and defined by judicial decisions and precedents, or by the express terms of state regulatory statutes.

Common carrier motor transportation companies come within the category of common carriers exercising a public employment and, as such, they are governed by the general principles of common carrier liability under the common law.

The common law rule in this country, that is, the rule followed in the various states of the United States, for there is no federal common law, is that one entrusted as a common carrier for hire is responsible "as an insurer of the goods to prevent combinations, chicanery and fraud."<sup>1</sup>

By the terms of an unconditional common law contract of carriage without reservation or exceptions the carrier is considered at law as an insurer to guarantee the safe delivery of the goods to the consignee and must assume liability for any loss or injury resulting from any cause, excepting those which afford the carrier a defense under the common law, including particularly loss or injury resulting from the acts of God, the people

<sup>1</sup> McCarthy V. L. and N. R. R. Ala. 193 (1893).





# CARGO LIABILITY IS CARRIER OBLIGATION

Clear Understanding of the Basis, Definition and Limitation of Liability Is Necessary in Successful Motor-Freight Transportation, Operation and Management

By G. LLOYD WILSON

or the public. The strictest proof of all possible care on the part of the carrier in the transportation, custody and delivery of the goods entrusted to the carrier's care is no defense to an action brought by the owner of the goods for the failure of the carrier to properly transport, care for or deliver the goods.

The common law liability of common carriers for hire may therefore be stated generally in the following terms:

A common carrier entrusted with the goods of others for transportation for hire is responsible for the safe transportation, custody and delivery of the goods, unless the carrier can defend his failure to transport, care for or deliver the goods by proving that the loss or injury is caused by (1) the act of God, (2) the act of the public enemy, or (3) the act or failure of the owner of the goods or the owner's agent.

Common carriers of goods, under the generally accepted rule of the common law followed in the various states, may limit their liability by the terms of express contracts. Carriers may limit their own liability as insurers to a basis of liability somewhat less than that of insurers, and may restrict also their liability for the loss or injury of goods due to the acts or failures of connecting lines, provided these limitations are made by express contracts brought to the notice of the shippers.<sup>(\*)</sup>

It is generally held, however, that contracts relieving the carriers from the consequences of their own negligence are void as contrary to public policy.

The various state courts of the United States have not always been in agreement as to the extent to which carriers could limit their liability, nor as to the application of the general rules governing the limitation of liability.

The rule followed by the United

States Supreme Court is stated in the case of *Express Company versus Caldwell*, as follows:

"It is now the settled law that the responsibility of a common carrier may be limited by an express agreement made with his employer (the shipper or owner of the goods) at the time of his accepting goods for transportation, provided the limitation be such as the law can recognize as reasonable and not inconsistent with sound public policy."<sup>(\*)</sup>

In the states where motor carriers engaged in the transportation of goods for hire are regulated, the state regulatory statutes usually provide for the assumption of liability of the carriers for the goods transported and restrict the limitation of liability by the common carriers. In a number of states common carriers are required to post bonds in sufficient amount to assure the owners of goods entrusted to the carriers that the latter will be responsible to the full extent of the liability imposed by law upon them.

It is obviously impossible in the brief compass of this discussion to analyze all of the state laws in order to determine the degree of liability required of common carriers and to inspect the rights of the carriers under these several laws to limit their liability. State regulation, however, is toward the type already found in several of the states which have pioneered in motor carrier regulation, of which Pennsylvania is a typical example.

The Public Service Company Law of the Commonwealth of Pennsylvania was approved July 26, 1913, and became effective Jan. 1, 1914, long before the transportation of freight by motor carriers became an important factor in American commerce. The term "common carriers" as used in this statute includes all corporations or persons engaged for profit in the conveyance of passengers or property, or both, between points within the state, by, through, over, above, or under

land or water, or both.<sup>(\*)</sup> Quite a comprehensive category! Obviously this includes motor carriers engaged in the transportation of passengers or property over the highways for hire.

Among the duties imposed upon common carriers under the law is that of issuing a receipt or bill of lading for all freight received for transportation between points within the state. The carriers issuing the bills of lading or receipts are liable to the lawful holders of the bills of lading or receipts for any loss, damage or injury to the property caused by the carriers issuing the bills or receipts or by any other common carrier to which the property is delivered or over the lines the property may pass en route to destination.

No contract, receipt, rule or regulation of any common carrier is permitted by the law to exempt the common carrier from the liability imposed upon it by law. Any such contract, release or other limitation of liability in conflict with the law is void and without effect.

Any common carrier which issues as the initial or originating carrier a receipt or a bill of lading for goods is entitled to recover from the common carriers upon whose line the loss or damage was sustained, if recovery is made or judgment obtained against the initial or original carrier by the holder of the receipt or bill of lading, or if the claim for the loss or damage is satisfied by the originating or initial carrier on behalf of the connecting carrier.

The Public Service Company Law of Pennsylvania provides specifically in this connection that:

"Any common carrier issuing such receipt or bill of lading, shall, in the event of a recovery of a judgment against or of a satisfaction made by, such carrier, for such loss or damage, be entitled to recover from the common carrier on whose line the loss or damage shall have been sustained, an amount not in excess of the loss or damage to said property which the lawful holder of said bill of lading or receipt would otherwise have been entitled to recover against such last-mentioned carrier, and not in excess of the amount actually paid to the holder of such receipt or bill of lading."<sup>(\*)</sup>

Motor freight transportation com-

<sup>\*</sup> Watkins' "Shippers and Carriers," Fourth Edition, Harrison, Atlanta, P. 30.

<sup>\*</sup> 21 Wall. 264; and 112 U. S. 331.

<sup>\*</sup> Article I, Section 1.

<sup>\*</sup> Article II, Section 1, Clause q.



panies use various plans of setting forth the basis of their liability and the limitations imposed upon the liability. A large number of motor carriers use bills of lading, the contractual terms and conditions of which with respect to the liability of the carriers, are the same or related closely to the provisions of the uniform domestic bill of lading used by the railroads throughout the United States.<sup>(6)</sup> This bill of lading contract provides that the carrier or party in possession of any of the property described in the bill of lading is liable as at common law for any loss of or damage to property, except as provided in bill of lading contract.

The terms of the contract provide that the carrier or party in possession shall not be liable for any loss or damage caused by such cases as:

1. Acts of God.
2. The public enemy.
3. The authority of law.
4. The act or default of the shipper or owner of the goods.
5. Natural shrinkage of the goods.
6. Fumigation or inspection or other acts required to be done or done by quarantine regulations or authorities even though the acts may be done by the carrier's officers, agents or employees.
7. Detention of the property in transit upon the request of the shipper, owner or party entitled to make the request.
8. Defect or vice in the property.
9. Country damage to cotton.
10. Strikes or riots.
11. Discharge of property at quarantine depot or elsewhere as a result of quarantine regulations or authorities, and
12. Mistake or inaccuracy of information furnished by the carrier or its officers or agents as to quarantine laws or regulations, except in the event of negligence chargeable to the carrier.

After the expiration of the period of free time allowed by the tariffs of the carriers and the sending or giving of a notice of arrival of the goods, the carriers cease to be responsible for goods as *common carriers* and become responsible for the goods as *warehousemen* only. The warehouseman is required to exercise reasonable care in the custody of goods and is liable for loss or damage suffered by the goods only to the extent that the loss or damage is caused by his failure to exercise the standard of reasonable care required by the law. The common carrier, as has been stated previously, is responsible for the goods as an insurer, except for acts of God, the public enemy and other acts beyond the control of the carrier.

Motor transportation carriers in other cases, limit or attempt to limit their liability by express provisions in their bills of lading or receipts fixing the maximum liability at definite limits per pound or package. Many motor carriers follow the example of the Railway Express Agency, Inc., and state in their bills of lading or receipts that their liability is released in consideration of their transportation rates to \$50 per 100 lb. or 50c per lb. if the shipments weigh over

100 lb., or similar limiting clauses.

A typical condition of this sort is expressed in one motor common carrier's bill of lading as follows:

"In consideration of the low rate charged for carrying this property, the shipper agrees that the value of the property under this agreement does not exceed the value of \$50, and that in event of loss thereof not more than \$50 shall be recovered."

If the shipments are valued at amounts exceeding the contractual limitation, many carriers offer to place insurance for the higher value at the expense of the shipper, or to transport the goods at higher rates dependent upon the higher valuation.

A typical, although vague clause of this sort provides that:

"If the shipper wishes to place a value upon his shipment in excess of that amount for which recovery is to be had in the event of loss, an additional charge will be made upon the excess value over \$50 so declared."

A much more definite and specific basis of motor common carrier liability for loss of goods is found in Monroe "Ship By Truck" Freight Classification, which provides:

"Rates quoted in individual tariffs of participating carriers, except where otherwise specifically noted, are based upon a value not to exceed \$50 on each shipment of 100 lb. or less, and not exceeding 50c per lb. actual weight on each shipment weighing more than 100 lb.; and the liability of the carrier is limited to the value above stated, unless a greater value is declared at the time of shipment and the declared value is paid for or agreed to be paid for on a basis of 10c for each \$100 of valuation or fraction thereof over \$50, with a minimum charge of 10c. The amount of any C.O.D. shipment will be considered as a declaration of value of shipment, unless greater value is declared at time of shipment."<sup>(7)</sup>

The contract terms and conditions of the bill of lading used by a number

<sup>7</sup> Freight Classification No. 4, filed with the California and Arizona Commissions, Rule 102.

of common carriers provide that:

"In all cases not prohibited by law, where a lower value than actual value has been represented in writing by the shipper or has been agreed upon in writing as the released value of the property as determined by the classification or tariffs upon which the rate is based, such lower value plus freight charges, if paid, shall be the maximum amount to be recovered, whether or not such loss or damage occurs from carrier negligence."<sup>(8)</sup>

<sup>8</sup> Section 2, a, Uniform Bill of Lading, Monroe's Freight Classification.

## Notes of Optimism Are Chirped on Many Sides

CONTINUED FROM PAGE 17

ance. This, however, is no sound reason why the idle equipment should not be carefully surveyed and, if circumstances warrant, made the subject of a recommendation pointing out in dollars and cents the economy of replacement. In short, nothing should be overlooked to replace old equipment with the modern, more economical, price-adjusted equipment.

The last half of this year offers every company an opportunity to strengthen its position. And changes are just as likely to occur as they did in the first half. On the basis of complete new registrations for the first five months Chevrolet outpaced Ford to lead the industry with, in round numbers, 29,000 units. Ford sold roughly 25,000, compared with 70,000 in the first five months of 1931. For the same period last year Chevrolet sold 45,000. Table No. 2 on this page tells an interesting story. Not only does it show that a number of companies—General Motors Truck, Reo, White and Diamond-T—made gains over the first five months of 1931, but it reveals the changes in relative standing in the industry which have occurred.

Table No. 1 tells its own story of what happened in the industry during the first half of the year.

TABLE No. 2

	5 Months * 1932		5 Months 1931		5 Months 1930		5 Months 1929	
	Total Sales	Posi- tion	Total Sales	Posi- tion	Total Sales	Posi- tion	Total Sales	Posi- tion
Chevrolet . . . .	29,351	1	45,551	2	58,977	2	66,746	2
Ford . . . . .	25,422	2	70,342	1	88,507	1	89,713	1
Int. Harvester . .	7,465	3	9,251	3	11,398	3	13,310	3
Dodge . . . . .	4,092	4	6,745	4	7,660	4	12,964	4
Gen. Motors . . .	2,885	5	2,422	5	4,648	5	6,577	5
Reo . . . . .	1,681	6	1,509	7	3,585	6	5,740	6
White . . . . .	1,417	7	1,114	10	2,082	9	2,500	8
Studebaker . . .	1,127	8	1,734	6	510	16	737	15
Diamond-T . . .	1,013	9	942	11	1,386	11	1,649	11
Mack . . . . .	729	10	1,388	9	2,378	8	3,008	7
Willys-Over . . .	624	11	1,393	8	2,450	7	1,937	9
Federal . . . . .	542	12	654	14	1,024	13	1,267	12
Autocar . . . . .	492	13	831	12	918	14	1,182	13
Stewart . . . . .	485	14	629	15	1,136	12	904	14
Brockway . . . .	408	15	(†)817	13	(†)1,904	10	(†)1,887	10
Sterling . . . . .	139	16	371	16	619	15	622	16
LaF. Republic . .	131	17	196	17	262	17	433	17

\* Adopted by the carriers in Official, Southern and Western Classification Territories, March 15, 1932.

\* Georgia figures not included in 1932 totals.  
† Brockway and Indiana.

# OIL ACTS AS SENTINEL TO WARN OF ENGINE WEAR

Seattle Fleet Holds Operating Cost to 3c. a Mile by Reclaiming, Analyzing and Properly Scheduling Oil

By MANDUS E. BRIDSTON

**M**AXIMUM speed and load are required of the eleven trucks operated by the *Seattle Daily Times*, Seattle, Washington, newspaper. Obviously this dual demand places a severe strain on trucks, and yet this fleet is operated at a cost of from 2 to 3 cents per mile in the out-of-town territory. Failure of a truck on the road is practically an unknown quantity despite the fleet's 100 per cent operating schedule, averaging 40 m.p.h. and capacity loads of from 1½ to 3 tons. No major accidents have been incurred.

Proper lubrication and inspection are the basic factors in this splendid operation, according to H. M. Peters, fleet superintendent. While lubrication is important, it is likewise a major item of expense, and as such must be subjected to the closest scrutiny. It is not merely a question of throwing fresh oil into the crankcase at regular intervals, but of getting the maximum lubrication per mile at the smallest possible cost.

The most important economy factor in the operation of this fleet is the closely checked use of an oil reclaimer which salvages 80 per cent of the used crankcase oil at a total cost of only 8c per gal., including filtration pads, power and depreciation. The Skinner Oil Reclaimer was installed about two years ago, during which time an average of 55 gal. of oil per month has been reclaimed. With new oil used now selling for 80 cents per gal., plus the new tax of 4c per gal., the large saving involved is quite obvious.

Of course, the fleet operator is as interested in efficiency as he is in economy, for the two factors cannot be divorced. This fleet operator advances the theory that reclaimed oil has some advantages over the original product, for the oil that withstands the heat



of the engine is the best part of the oil and it is this part that is reclaimed in the process.

However, reclaiming has limitations that must be considered. Constant reclaiming of the same oil breaks down the molecular structure of oil eventually, increases the viscosity to a point where it has too much adhesive qualities to properly flow. Because of this factor, reclaimed oil must be analyzed at regular intervals to provide maximum efficiency.

Then there is another economy factor that many fleet operators overlook. Some engines can run more miles on a given quantity of oil than others. In this particular fleet the variation ranges from 500 miles to 3000. Only a chemical analysis of oil at various mileages can determine whether a particular engine is getting full value out of the oil used.

This concern uses as a standard mileage 100 miles for each quart of crankcase capacity. For example, a five-quart crankcase would have a standard of 500 miles for each filling, while a 12-quart case would normally be changed every 1200 miles. However, when the crankcase oil is due to a change, it is given a chemical analysis, the operator using the Faber Petroleum Inspection Service for this purpose. After analysis, the chemist recommends either greater or less mileage per filling, according to the condition of the oil removed from the crankcase. If the chemist finds water in the oil, he suspects a leaking water jacket or lead gasket. If too greatly diluted with gasoline he may recommend looking for worn piston rings. When motor vehicles run long distances without many stops, there is less gasoline dilution and resultantly the oil mileage increases perceptibly, in this fleet up to 3000 miles.

When oil is removed from a crankcase, it is bulked with similar oil from other trucks, no effort made to segregate the older oil from the newer, nor the oil from one truck from that of another. It is then reclaimed at the rate of 2½ gal. per hr. Reclaimed oil is chemically tested once each month and the new oil added as needed.

The process of oil reclamation is simple in principle, consisting of distillation and filtration. The oil is first heated to evaporate all water and gas-

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# DON'T LET TORQUE AND HORSEPOWER MYSTIFY YOU

They're Merely Units for Measuring Ability of an Engine to Pull a Truck Up a Grade and on the Level

This article introduces a series designed to help those who sell and those who operate trucks to an understanding of Transportation Engineering principles—how to calculate and apply Engine Power, Road Speed, Hill-Climbing Ability, Gear Ratios, Weight Distribution, Etc.

By JAMES W. COTTRELL

A TRUCK salesman imbued with the idea that the horse will be eliminated from the field of transportation within the near future jokingly suggested that the truck industry should discard such an old-fashioned term as horsepower.

Despite the salesman's objections it is probable that horsepower will be used long after the last draft horse is honored by having his hide stuffed, mounted and displayed in a museum. The term, horsepower, is a unit of measurement with a historic background more than 150 years old. James Watt, inventor of the steam engine, set up the value as a means of comparing the work ability of his engines with horses. He was introducing a new product and, so the story goes, for good measure established a horsepower at  $1\frac{1}{2}$  times the power of a horse, thereby putting steam power at an advantage.

One horsepower represents the ability to raise 33,000 lb. one foot per minute. It is the product of three factors, weight, distance and time multiplied together and therefore shows the rate at which work is performed. Changing factors in direct proportion does not change the horsepower unit. If we reduce weight we can increase distance in proportion, if we decrease distance we can increase weight or decrease time.

For illustration, let us suppose that



we have a one horsepower hoist with no friction or other power losses. With it we can lift  $16\frac{1}{2}$  tons upward at the rate of one foot per minute. That is slow elevating, so we try this imaginary hoist on a 1000 lb. load and we find that we can lift it 33 ft. per minute, or a 100 lb. load 330 ft. per minute. In each case work, that is, lifting weight, is performed at the same rate of 33,000 ft.-lb. per minute; the difference in each case is the manner in which the total amount of work is accomplished.

A seesaw or pry bar shows in another way how distance and weight are related, more of one less of the other. If we have a plank 10 ft. long, balanced in the middle and place a 100 lb. weight on each end the plank will

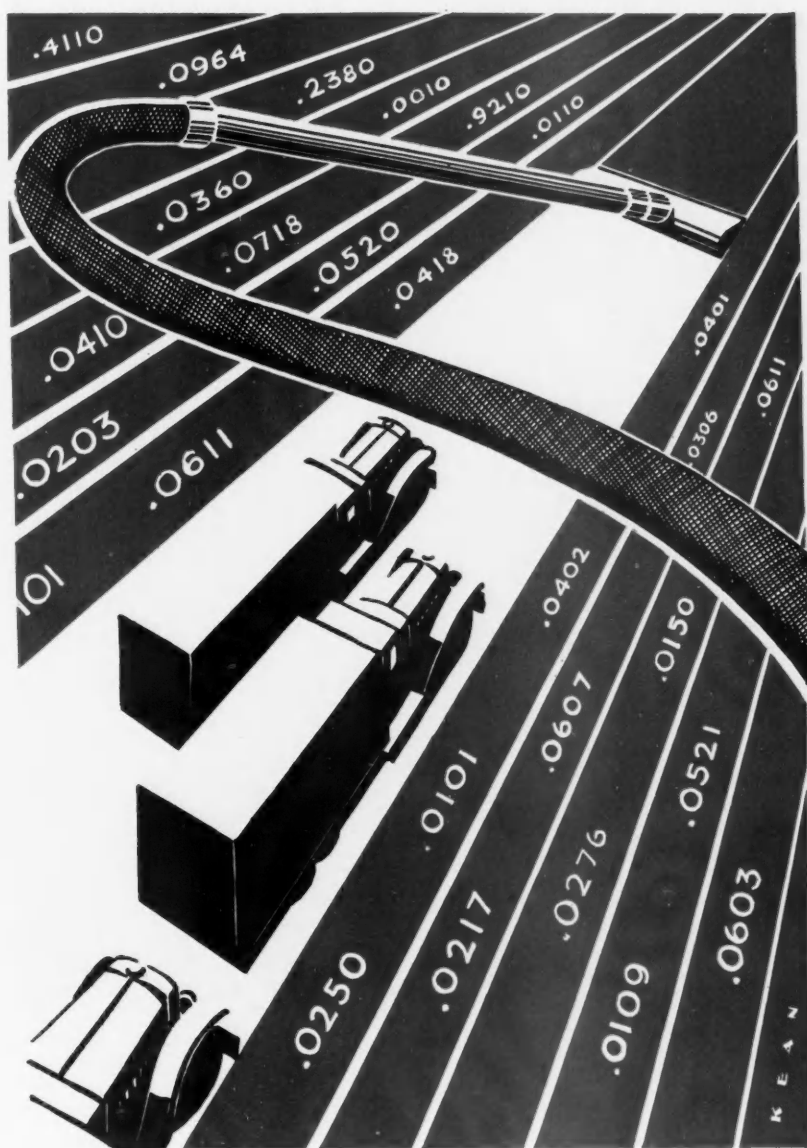
balance. If we move one weight halfway toward the center the other weight will pull its end of the plank down. To balance the plank we must put 200 lb. at a point  $2\frac{1}{2}$  ft. from the pivot. Note that weight on one side multiplied by its distance from the pivot equals weight on the other side multiplied by its distance from the pivot.  $100 \text{ lb.} \times 5 \text{ ft.} = 200 \text{ lb.} \times 2\frac{1}{2} \text{ ft.}$

Engine power is developed in a straight line but it is delivered in a circle, in the form of rotation of a shaft. During the power stroke in a cylinder the piston is forced downward by pressure of the burning gas and this pressure is transmitted through the connecting rod to the crankshaft. Thus, the up and down

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# S. A. E. COST CLASSIFICATION CLEARS WAY FOR COMPARISON



"HOW much does it cost you per mile for repairs?"

Unless the operator asking this question figures repairs on the same basis as the operator being asked, the desired information will be worthless. Comparisons to be useful must be based on similar factors. One operator may include accident repairs in the chassis repair account, another may exclude them. Likewise there may be a difference in opinion as to the inclusion of such charges as body repairs, cab work, etc. Further, one fleet may be socked with a terrific rental charge for shop space in a downtown building, which is included in the repair account, while another may pay little or nothing for use of

space. Obviously, cost analysis and comparisons under these variable conditions are impossible.

But comparisons are useful—they are the means of checking efficiency; they reveal shortcomings in operation and maintenance and point the way to improvement. The Transportation and Maintenance Committee of the Society of Automotive Engineers, recognizing the value of such comparisons and the futility of comparing costs obtained under different accounting systems, developed a uniform system for classifying charges arising from the operation of motor vehicles after a study of many existing systems. The practice recommended, consists of 21 accounts.

All Charges Arising From the Operation of Trucks Are Classified and Placed Into One of 21 Accounts

Where companies keep their accounts in accordance with requirements of regulatory bodies, truck accounts can usually be reclassified for analysis and comparisons. In making final analysis, costs may be figured on a mileage or hourly basis or on a ton, ton-mile, gallon, gallon-mile or some such basis depending on the type of operations. In public utility operations, the cost per hour is commonly used.

The society also recommends that all costs be kept by individual vehicles. This can be done by assigning a number to each vehicle or a series of numbers to classes of vehicles, or they can be assigned in rotation as the vehicles are required.

The S.A.E. classification, which covers all items of motor-vehicle expense, may be grouped under two major headings, variable and fixed expense. The combination, however, is not inflexible, as the various classifications may be combined in any way the operator chooses. But all items of expense must be included.

## VARIABLE EXPENSE

1. Gasoline or electric
2. Oil
3. Tires and repairs
4. Repair material on chassis
5. Repair material on cab, body, equipment
6. Repair labor on chassis
7. Repair labor on cab, body equipment
8. Painting labor and material
9. Accident labor and material
10. Garage labor
11. Garage material
12. Miscellaneous expense

## FIXED EXPENSE

13. Drivers' and helpers' wages
14. Garage rent maintenance
15. Insurance for vehicles
16. Licenses and taxes on vehicles
17. Depreciation on vehicles
18. Superintendence
19. Interest on vehicle investment
20. Overhead; garage, shop and stores
21. Administrative expense.

Into these 21 accounts charges arising from the operation of motor vehicles are classified as follows:

1. **Gasoline or Electric Energy.**—Charge cost of gasoline used as fuel, or electric energy used as power in the operation of each vehicle.

**2. Oil.**—Charge oil used for engine lubrication. Cost of transmission lubricants and greases is charged to account No. 11, Garage Material, as it is difficult to measure quantities used for lubricating each vehicle.

**3. Tires and Tire Repairs.**—Charge cost of all tires and tubes for renewal or tire mileage, also cost of changing and repairing. Spare tires purchased for new vehicles are not charged against this account but against investment in the vehicle. Credit any money received for junked tires and factory adjustments.

**4. Repair Material Used on Chassis.**—Charge all parts and materials used for repair of chassis not due to accidents. Accident repairs are chargeable to account No. 9, Accident, Labor and Material. Credit any money received from junked parts and factory adjustments.

**5. Repair Material Used on Superstructure.**—Charge cost of all parts or material used in repairing cab, body, or such auxiliary equipment as winches, pumps, derricks, etc., not due to accidents. Credit any money received from junked parts or factory adjustments.

**6. Repair Labor Used on Chassis.**—Charge cost, including shop-overhead, of all labor used for repairing the chassis not due to accidents.

**7. Repair Labor Used on Superstructure.**—Charge cost, including shop-overhead, of all labor used for repairing the cab, body or auxiliary equipment not due to accidents.

**8. Painting Labor and Material.**—Charge cost of materials, labor and paint shop-overhead. Charge painting due to accidents to account No. 9. Charge painting of new vehicles to investment in new vehicles.

**9. Accident Labor and Material.**—Charge cost of all material and labor, including overhead charges, used in accident repairs. Credit any money received from insurance.

**10. Garage Labor.**—Charge labor used in washing, polishing, oiling and greasing vehicles, inflating tires, filling radiators, putting water in batteries and similar work.

**11. Garage Material.**—Charge cost of material, which is too small to account for individually or to each vehicle. The items are: grease, transmission oil, penetrating oil, anti-freeze solution, battery water, rags, waste, sponges, chamois, nickel polish, body polish, soap, kerosene, boots, rubber aprons, hose and the like; also charge cost of upkeep of equipment in the garage independent of the repair-shop, such as equipment for electric charging, gasoline and oil storage and dispensing, washing, compressing air, etc.

**12. Miscellaneous Expense.**—Charge extraordinary expense incurred in operating vehicles which is not provided for in the foregoing accounts and is not chargeable to each vehicle. This includes tire changes, drivers' uniforms, gloves, robes, etc.

**13. Drivers' and Helpers' Wages.**—Charge drivers' and helpers' wages and incidental expenses.

**14. Garage Rent and Maintenance.**—Charge rent, maintenance of garage buildings and storage in public garages. In case operator owns garage, charge as rent taxes, insurance, maintenance, water and retiring charges on garage investment.

**15. Insurance.**—Charge insurance carried on the vehicles only such as fire, theft, property damage, collision and public liability insurance.

**16. Licenses and Taxes.**—Charge vehicle licenses and taxes assessed by the state, city and county and cost of drivers' licenses, if paid.

**17. Depreciation.**—Charge monthly to each vehicle. This charge is discussed hereinafter.

**18. Superintendence.**—Charge salary of superintendent of transportation, salaries of vehicle dispatchers, clerks and garage superintendents.

**19. Interest.**—Charge interest on investment in vehicles, less depreciation. Interest on garage buildings and equipment is charged to account No. 14, Garage Rent and Storage, or to account No. 20, Overhead Expense.

**20. Overhead Expense.**—Charge for garage overhead: watchmen's wages; porter's wages; insurance on garage equipment; electric light and power; heating; operation of superintendent's automobile; lost time of garage employees due to vacation, sickness or leave of absence with pay; and cost of brooms, floor brushes, coal shovels, hand soap, mop handles, mops, paper towels, ice, drinking water, fire extinguishers, lamp globes used for maintenance, etc. Charges for shop overhead are: Shop foreman's salary; watchman's wages; porter's wages; insurance on shop equipment; electric light and power; heating; water; operation of pick-up truck; wages of pick-up truck driver; operation of wrecking car; small tool replacements; upkeep, repairs and depreciation on shop machinery and equipment; lost time of shop employees due to vacation, sickness or leave of absence with pay; and miscellaneous small items and supplies, such as acid, coal, hacksaw blades, cotter-pins, emery cloth, washers, shims, rivets, penetrating oil, sandpaper, shellac, etc. For stockroom charge: salaries of stock men, space occupied and interest on investment in parts stock.

**21. Administrative Expense.**—Charge office rent, telephone, postage, stationery and supplies, depreciation of furniture and fixtures, legal expense, automobile expense, etc.

#### Depreciation

Depreciation, account No. 17, may be charged on a monthly or mileage basis. If depreciation is computed on a monthly basis, the total first cost of the vehicle (including chassis, cab, body, accessories, freight, painting, etc.) is divided by the total number of months it is estimated the vehicle will run. For example, if the total first cost of the vehicle is \$4,000 and its estimated life is 48 months, then \$83.33 per month should be charged as depreciation.

If vehicles are depreciated on a mileage basis, the total first cost of the vehicle is divided by the estimated life in miles the vehicle will run, and depreciation is charged each month on the basis of the mileage it is operated in that month. For example, if the first cost is \$4,000 and the estimated life of the vehicle 50,000 miles, the depreciation rate per mile should be 8 cents.

Rate of depreciation must be computed for each line of business, depending upon the nature of the roads traversed and the conditions under which transportation is conducted. In most operations the mileage basis of computing is most equitable, but for operations where the mileage is abnormally low, depreciation should be set up on a monthly basis. But if the mileage method is preferred under the latter conditions, caution should be used to make the rate per mile high enough.

#### Have Local Haulers Been Handcuffed?

CONTINUED FROM PAGE 24

something else than trucking? They can't answer either question.

From the viewpoint of over-road haulers, they are not so remote from being legislated out of business. Not one over-road line in a thousand is making money—and if they say they are, their cost records are wrong, or else they deserve a place in the Smithsonian Institute, or else a job in the House of Morgan.

As to private carriers—well they haul tonnage, and the railroads want tonnage—anybody's tonnage. So what . . . ?

Well, it seems to be "up" to those in the business of motor transport, or those who sell to truck owners, or those who work for owner organizations, or those who utilize truck service, and find it satisfactory, to find some way to guide "for-hire" men out of their dilemma. It's an ambitious thought; an ambitious and terrific program. A transportation Moses, arriving now, and being rich in the wisdom of Solomon, could get himself a big job, toot sweet, if he had the solution. Our own version of what may be the answer is given on page 19, and there is nothing particularly startling about it. Some of the suggestions are being followed already, to a minor extent. Others will invite a torrent of abuse upon the golden curly locks of the writer. On the other hand, if something definite is not done to bring order out of the transportation chaos, the powerful, well-financed railroads are going to give truck owners the licking of their lives.

W. S. Graves

W. S. Graves, former truck sales-manager of Dodge Brothers, died a few days ago of a heart attack. Mr. Graves was in ill health for some time.



## "MANHATTAN MADNESS"

◆IN NEW YORK CITY THE LOCAL TRUCKMEN seem to be considerably surprised that the volcano on which they have been sitting for years has suddenly taken a notion to spout hot cinders.

For a long time now it has been conceded that railroads inevitably would have to inaugurate store-door delivery services. During all these years of discussion the New York truckmen, apparently, have been serene in the conviction that any store-door plan developed for New York City would naturally take them into consideration. However, recent events—in Philadelphia, for instance—indicate that with the Railway Express Agency hungry for tonnage, independent truckmen have cause to be perturbed at the mention of store-door delivery.

The store-door plan announced for New York City beginning Sept. 15, therefore, has alarmed local haulers. In the face of a well-founded suspicion that the railroads will throw all the business they can to the Railway Express Agency, the truckmen are making a valiant effort at self-preservation. They have made two suggestions to the trunk line railroads whereby local haulers can be made part of the plan at a saving in delivery costs to shippers. All this is commendable.

In their efforts to win railroad sympathy, however, the local truckmen have resorted to tactics which cannot win them the respect of railroad men and must certainly dishonor them in the eyes of all other truck operators. This behavior has taken the form of lip service and (the ugly phrase must be spoken) boot-licking. The haulers, of course, may not be stretching the truth very far when they insist to the railroads that they have always been their friends. (It is a fact that their tonnage depends upon the railroad tonnage.) And the local haulers may simply be avoiding hypocrisy when they insist to the railroads that they are the avowed enemies of over-the-road haulers. Under the circumstances they may be morally justified in making public utterances condemning the over-the-road haulers and voicing demands, in support of railroad contentions, that they should be stringently regulated and taxed. Probably they would even be incensed if one were gratuitously to excuse these actions as hysteria induced by the heat of self-preservation.

There is, we must admit, some cause for this behavior of the New York truckmen. But it does seem a pity that they should think it necessary to place dynamite under the bridge that may be their sole retreat to a business existence. Because it is a fact that every local hauler is a potential over-the-road hauler, and if the worst comes to the worst he can switch into direct competition with the railroads if the railroads refuse to retain him as an ally.

And the worst, frankly, should be anticipated. The Railway Express Agency

## AFTER



## HOURS

will unquestionably get all of the store-door-delivery freight that it can handle. Common sense dictates this course because any reduction in the Agency's operating loss is money in the railroad pocket. The public would dub the railroads fools if they didn't use the Agency service. It is unquestionable, also, that some of the trucking companies in New York will share in the store-door service, but most of the companies had better prepare now to scutter to safety. And when they scutter they would find mental relief in the knowledge that they didn't have to traverse a bridge in momentary danger of being blown up.

The New York truckmen are fully equipped to perform the railroads' store-door deliveries. If they do not deserve the business on this basis there is no hope for them in an appeal to railroad sympathy.

## GOOD? THEY BETTER BE!

◆WE ATTENDED A SALESMEN'S MEETING the other day and we had a vision of what salesmen in the truck industry could be like if factories only went about the task properly to educate them.

The meeting was held in Asbury Park and brought together the eastern group of Distinguished Service Club members of the General Motors Truck organization. The gathering was intended chiefly as a reward for meritorious service, but while the men were together John Howard and his aid, Mr. Babcock, from the

factory, took advantage of the opportunity to determine to what extent the men had developed under the sales instruction program which the company has been stressing.

And were we surprised? In fact, were we amazed? These salesmen, representing (we'll admit) the cream of salesmen, answered questions dealing with transportation engineering and details of truck design as if it were the most natural thing in the world for a truck salesman to know the answers. One man who rated high had never sold a truck before he entered the industry a year ago. This alone speaks well for the value of a carefully planned course of instruction. It was further proof that the industry is full of men who could become excellent producers if management only took the trouble to develop them.

In view of the fact that sales instruction is so limited, are we to suspect that most managements are inadequate to the task?

## A DEEPER SIGNIFICANCE

◆THE COMMONWEALTH OF PENNSYLVANIA is airing an odoriferous scandal involving the chairman of the Public Service Commission, William D. B. Ainey. Mr. Ainey resigned the other day after charges had been placed before the State Senate accusing him of accepting gratuities from utilities and their representatives. Mr. Ainey denied the accusations and stated he was resigning because ill health prevented him from facing the rigid investigation that is being planned and because he was too poor to bear the expenses of defending himself.

Governor Pinchot stigmatized Ainey's resignation statements as "childish," declaring that the Public Service head had been "well enough to travel in private cars of the Pennsylvania Railroad" and that after going on the Commission a poor man 17 years ago he had been able to "clip coupons on \$100,000 worth of bonds" between 1926 and 1931.

The Governor ably summarized the case when he stated: "I repeat that Ainey's resignation is proof of guilt. But I repeat also that Ainey's guilt or innocence is comparatively insignificant. What the people of Pennsylvania want to know, and what they have a right to know, is the truth and the whole truth concerning the relations of the public utilities of this state and the Public Service Commission. Until they do know they will rightly believe that the public utilities have deliberately corrupted the Commission and used it as their catspaw to pull their chestnuts out of the fire."

We make a note of this here merely to illustrate one of the things the truck industry is up against these days. And in order to pave the way for the suggestion that when truck operators urge regulation of motor trucks they make certain that they are not playing into the hands of the Philistines.—G.T.H.



# 11 SOLUTIONS TO

**Fig. 1. Drill Overflow Pipes**

Poking a wire down a clogged radiator overflow pipe results in nothing more than a few pretzel twists in the wire, in many instances. A supervisor of maintenance for a large fleet came upon a mechanic trying to force a wire through a pipe. Interested he watched, tried it himself and then called a shop huddle on the subject.

The committee recommendation was to "drill" the obstruction by means of the spiral wire from the inside of a speedometer-drive cable rotated by an "eggbeater" type of hand drill. The wire is pushed through the pipe until it strikes an obstruction and then is revolved until it cuts through.

**Fig. 2. Low Oil Pressure**

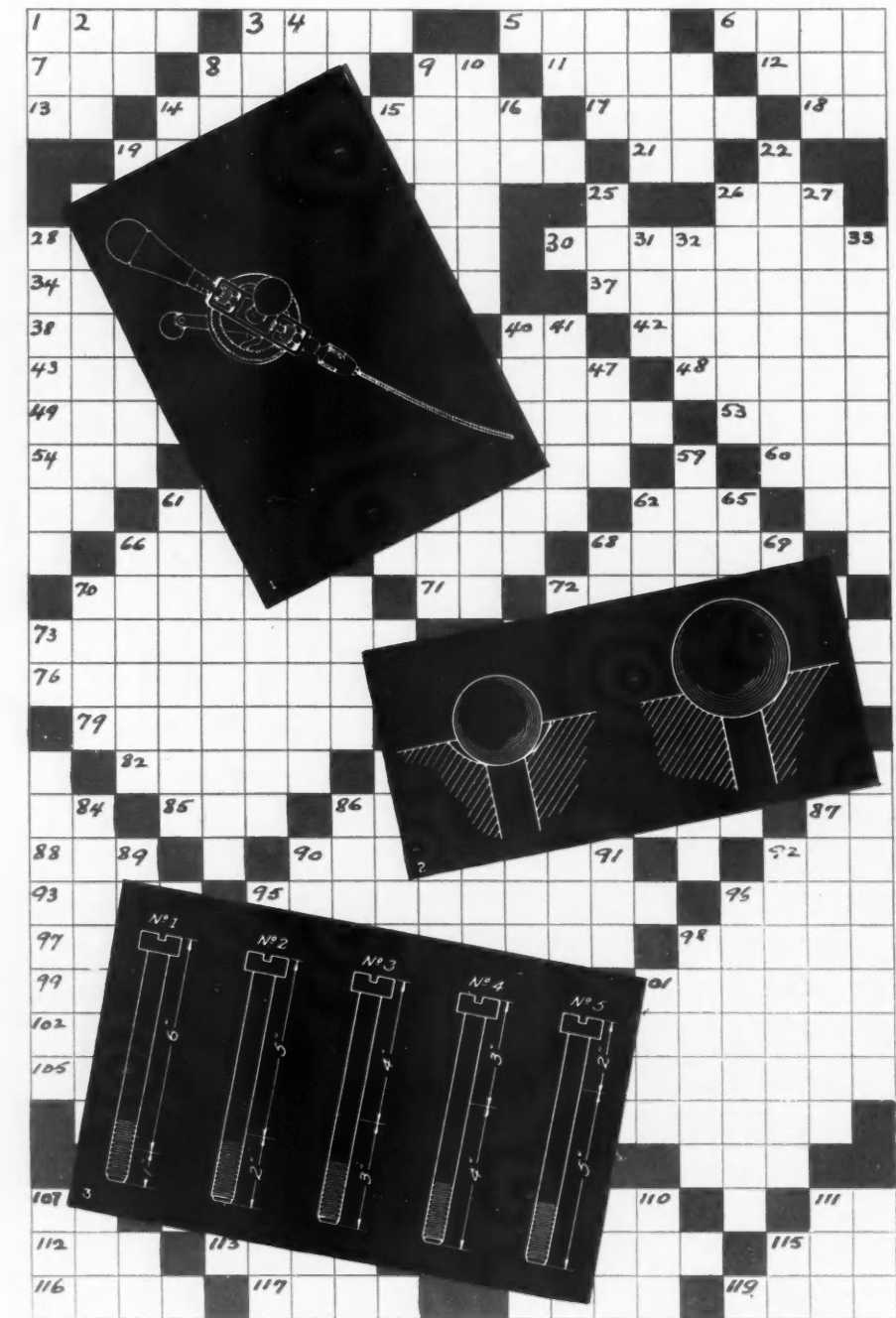
Loss in oil pressure as soon as the engine warmed up which continued in spite of adjustment of bearings and the installation of a new oil pressure regulating valve bothered the truck owner and the shop for a long time. Every part of the engine oiling system and most of the engine itself was checked not once but several times.

The oil pressure relief valve was replaced as a last resort but the trouble continued. Finally the shop man, taking nothing at all for granted, removed the oil pressure valve and found that during assembly it had been supplied with a ball check, which was entirely too small, which allowed oil to escape as soon as the oil became hot. Another new relief valve cured the trouble.—Reported by Bruce Swope, Danville, Pa.

**Fig. 3. A Puzzle**

**Problem:** ship four 8-in. special heat-treated spring bolts from a stock of 7-in. bolts. Heating and stretching inhibited.

M. A. McCullough, service manager, Maccar, Scranton, Pa., solved this puzzle in a manner both ingenious and effective. He took five of the 7-in. bolts and cut 1 in. from the first, 2 in. from the second, 3 in. from the third, 4 in. from the fourth and 5 in. from the fifth. He then welded the 2 in.



section from bolt No. 2 to the 6 in. length of bolt No. 1. The second complete bolt was made up of the 5 in. length of bolt No. 2 and the 3 in. piece cut off of bolt No. 3. And so on. The result was four 8-in. bolts and a 1-in. piece from the threaded end of bolt No. 1 and the 1-in. head of bolt No. 5. Easy when you know how, isn't it?

**Fig. 4. Portable Heat**

An acetylene torch, similar to those employed by telephone linemen, is used

by several brake service stations for freeing frozen brake parts. Linde Air Products Co. reports that the acetylene tank is carried on the two-wheel hand cart shown which was built up by welding in the brake shop. It is made of tubing and flat stock with a pair of steel wheels.

**Fig. 5. Vacuum Connection**

A simple change in the vacuum connection on an intake pipe for a vacuum brake booster made valve grind jobs

# SERVICE PUZZLES

A Collection of Worthwhile Ideas and Suggestions That Have Saved Shops Time and Money and Mechanics Muscular Effort and Mental Distress on Difficult Jobs

last about four times as long, according to the experience of Frank A. Rose, San Diego, Calif. The vacuum connection was at the rear of the manifold which caused an unbalanced mixture. A tapped hole and a few standard pipe fittings equal the mixture fore and aft in the manifold when the booster takes on air. The top connection is for the windshield cleaner.

**Fig. 6. Cold Rings, Hot Blocks**

Solid carbon dioxide, used for cooling ice cream in packages as well as refrigerator bodies, has another job, this time in the repair shop.

Valve seat rings, inserted after cutting out worn valve seats, must be tight and stay put, but this is not the easiest job in the world. By cooling the ring with solid carbon dioxide way below zero and dropping it in a block heated to about 600 deg., the resulting expansion of the ring and contraction of the block make a tight and permanent fit. Naturally the ring expands a lot when it is heated by operation of the engine. The idea is suggested by Wilcox-Rich Corp., Detroit, Mich.

**Fig. 7. Setting Stop Light Alone**

"Just before getting under a truck to adjust the stop light switch lean the broom or a board against the light. When you pull the switch the reflection on the board tells you 'Off' and 'On'.

"The same stunt tells the bad bulb story sitting in the seat. Surrender? Yes. Put in the missing bulbs, fellows." — *Billie Burgan, San Diego, Calif.*

**Fig. 8. Wax the Top Too**

Life of material in cab and body tops can be prolonged by rubbing with body wax several times a year, according to an experienced main-

tenance man. He advises use of paste rather than liquid and a lot of rubbing as on fine body jobs.

**Fig. 9. One Man Less**

One man can install the heaviest dual rear wheels with tires easier than two men by ordinary means, according to C. S. Battelle, Delhi, N. Y., who offers the idea for the help of others.

Place wheel with tire close to hub, kneel or squat in front of wheel and place forehead against top of wheel. Place two bars, not more than 2 ft. long, one on each side of the wheel at bottom. Then lift and guide the wheel on the studs with the bars, meanwhile guiding the top with the head. Wear a cap.

"I have put them on this way with a lift of six inches to be made and find it easier than to horse them on with a helper," says Mr. Battelle.

**Fig. 10. Timing Universals**

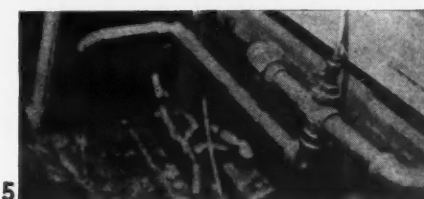
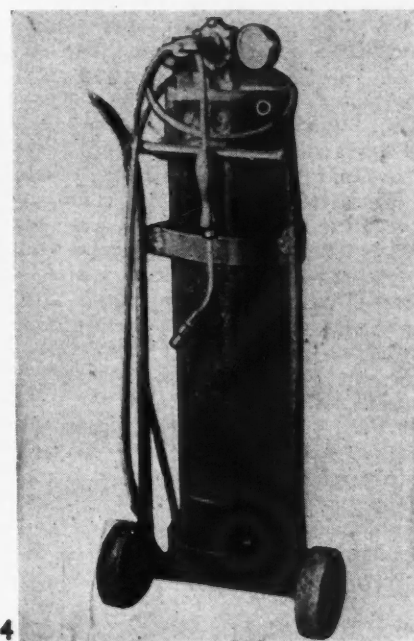
Universal joints on propeller shafts must be "timed" together, otherwise vibration and rapid wear will result. Many of the forward joints are marked so that the correct position for reassembly can be plainly seen, if they are not marked they can be in the well-known timing-gear method.

**Fig. 11. Negative Welding**

A common maintenance job in the electric light and telephone field is that of welding Stellite on the edge of earth augers. This job is done by electric welding, but has proved very troublesome. A fleet manager in Pittsburgh, Pa., found that jobs can be done easily by reversing the polarity of the electric welder. He does not know just why the action takes place but is very much satisfied with the results.

## The Problems

1. Free overflow pipes
2. Cure lost oil pressure
3. Stretch bolts
4. Make heat portable
5. Lengthen valve life
6. Cool rings in hot blocks
7. Set stop light alone
8. Extend cab top life
9. Save a man
10. Time universals
11. Weld Stellite



# FRUEHAUF ST. PAUL TIMKEN MIDGET

St. Paul Model 36UB  
Dumps to Right Only

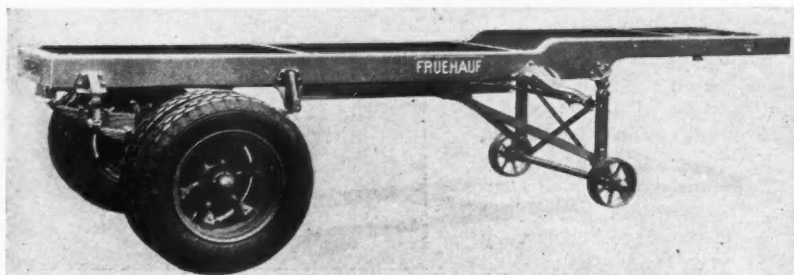
**S**T. PAUL HYDRAULIC HOIST CO. has added a side dump model which dumps to the right only, to its line. This new unit, designated as Model 36UB, is designed for mounting on a 1½-ton chassis and is offered together with the St. Paul Type 459 1½ cu. yd. body. It was particularly developed for such road work as repairing shoulders, filling ruts and leaving stock piles. Two sizes are made: for 131-in. wheelbase chassis, listing at \$333 and for 157-in. at \$376.

Four wood sills are provided for cushioning and quieting the body, sturdiness is given the unit by ample use of channels, pump is stationary, flexible hose is not used, dumping angle is high and controls are in cab.

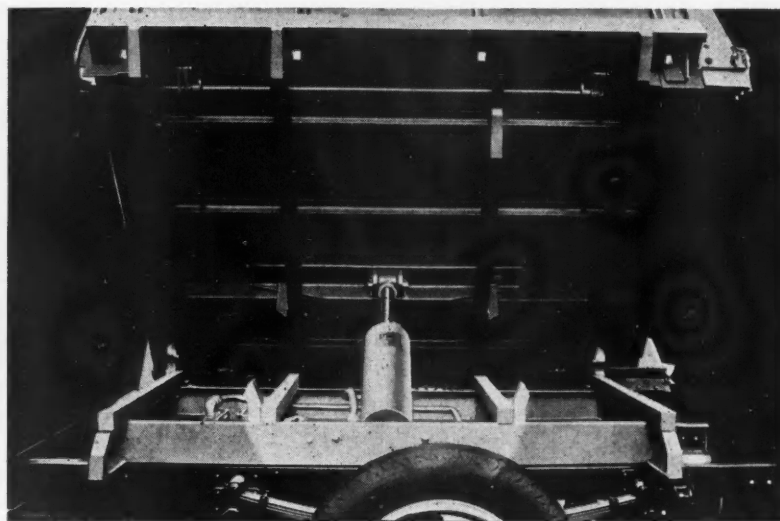
Fruehauf Prices New 3-5-Ton Semi-Trailer at \$290

**A**NEW semi-trailer, rated at 3 to 5 tons and designated as Model B-941, is Fruehauf's latest trailer contribution at the low price of \$290, less supports. The frame of this new unit is pressed steel with side members formed from one piece of steel—7 in. deep. Cross members and gusset plates are die formed and hot riveted. The axle is forged from nickel steel with 2 x 2½-in. beam and a 2½-in. spindle. A small upward camber is put in the center of the axle to equalize contact of tires on crowned roads.

The upper half of the fifth wheel is built into the front end of frame and contains the king pin, 2½ in. in diameter, securely riveted in place.



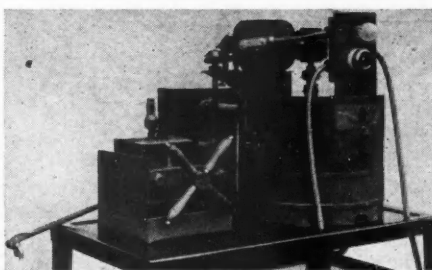
Fruehauf  
Model  
B-941 3  
to 5-ton  
semi-  
trailer



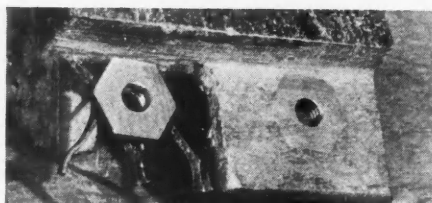
Sides of this new St. Paul side dumper are removable for converting into platform type body

Bodies of all sizes and types to fit this model also are produced.

Model B-941 may be operated with a permanent hook-up, in which the supports are not necessary. Supports however, are supplied if necessary, being supplied and mounted at extra cost of \$70. Power brakes are extra.



Midget oil reclaimer



Cutaway of Timken liner

Timken Brake Liner Is  
Molded Over Steel

**T**IMKEN-DETROIT AXLE CO. enters the replacement brake liner field with the introduction of a liner

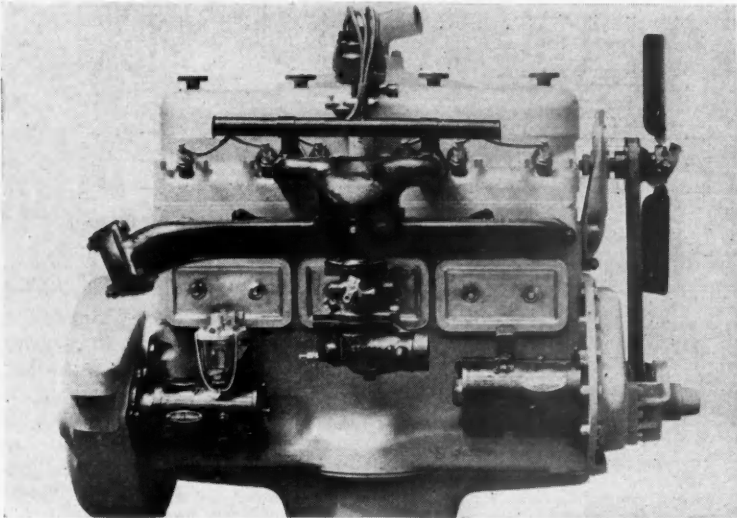
designed specifically for application to heavy-duty trucks, trailers and buses. The liner is molded over an expanded steel grid shaped so that its strips lie at an angle rather than perpendicular to the liner surface to add to the bond and strength of the completed unit. Into this steel foundation before molding are placed threaded anchor nuts. The liner is attached to the brake shoes of air brakes by studs screwed upwards through the shoe into the anchor nuts. This construction eliminates the usual bolt or rivet holes through the liner, thereby increasing the effective area of the liner, preventing accumulation of grit which is claimed to increase drum life and tends to reduce cracking because of anchorage in the grid. The square ground ends of the shoes also act as scrapers removing dirt and grease from drums.

Youngstown - Miller Two-Gal. Batch Oil Reclaimer

**Y**OUNGSTOWN - MILLER "MIDGET" is the name of a new oil purifier, listing at \$347, just introduced to the trade by the Youngstown Steel Car Corp., Niles, Ohio. The unit is almost automatic, handling oil in 2-gal. batches and has a monthly capacity of from 200 to 250 gal.

To operate, only two acts are required, the pouring of two gallons of drainage oil into the heating chamber and the throwing of a switch, which controls heating elements, agitating mechanism and induction fan. The fan draws off vapors, passing them through a condenser, where the lighter ends of the oil and gasoline are deposited as penetrating oil. No attention need be given the equipment until a signal light flashes, which indicates that the proper temperature has been reached, and a thermostat automatically cuts out the heating elements. The cut-out functions about 1¼ hr. after starting. The operator then starts the pump, which forces the oil through a filter press to remove carbon, sludge, metal particles.





Waukesha "Full Power"  
Engines Have F-Heads

WAUKESHA has christened its new line of heavy-duty engines "Full Power" but characteristics of the three six-cylinder models, the first in the series, suggests the use of a "middle name" or two. Valve arrangement, inlet in the head and exhaust at the side, puts these engines in the F-head class, none of which are used in trucks in current production. In addition to mechanical features the engines embody new materials including an alloy iron for cylinder blocks, another for manifolds, and new bearing metals.

#### Waukesha Power Data

Model	6-90-255	6-110-358	6-125-462
Peak hp.	90	110	125
@	3200 r.p.m.	2800 r.p.m.	2600 r.p.m.
Peak torque	182 lb. ft.	254 lb. ft.	324 lb. ft.
@	1600 r.p.m.	1200 r.p.m.	1000 r.p.m.
Bore	3 3/4	4	4 3/8
Stroke	4 3/4	4 3/4	5 1/8
Displacement	255	358	462

Model numbers of the three sixes, which are three part figures, designate the number of cylinders, horsepower and piston displacement in turn. In order of size they are Model 6-90-255 with cylinders 3 3/4 x 4 3/4, Model 6-110-358 which has 4 in. bore and 4 3/4 in. stroke and Model 6-125-462, cylinder dimensions of which are 4 3/8 x 5 1/8 in. The Full-Power line ultimately will be complete for all types of service for which Waukesha engines are built. The present offering will be followed by other models.

Although power output of these engines is relatively high compared with conventional practice, the company states that the ratings are more conservative than on previous models. Design is based upon research by H. L. Horning, president of the com-

TURN TO PAGE 44, PLEASE

Heil Model SL Dump  
Unit Lists at \$195

MODEL SL hydraulic dump is Heil's latest contribution to the light-duty field. It is designed for mount-

Waukesha's new line of "Full Power" F-head engines peak at 90, 110 and 125 hp.

ing on 1 1/2-ton chassis and is offered in two sizes: 1 1/2 yd. capacity, listing at \$195 and 2 yd. capacity at \$203. The unit consists of a self-contained, cast cylinder hydraulic hoist and supporting frame, a body selected from the Heil SL series of body models, a



Heil Model SL 1 1/2-ton dump

power take-off and connecting parts and cab controls. The complete unit can be quickly and easily mounted on any 1 1/2-ton short-wheelbase truck de-

# WAUKESHA UTILITY HEIL

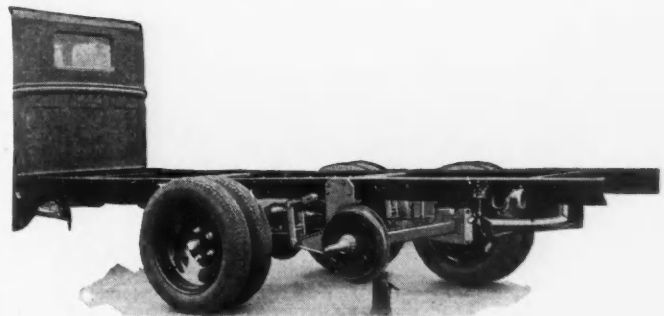
signed for a 7-ft. body by use of U-bolts.

Among the features of this unit are: A two-way drive pump, in which each of the two gears of the pump is fitted with a shaft so that power take-off shaft may be coupled to either according to whether drive is clockwise or counter-clockwise; an integral oil duct cored right into the cylinder casting eliminating leaky piping; provision for the addition of side boards on body; tailgate control easily accessible from cab; offset type tailgate hinges to provide large tailgate opening; and wood sills to cushion body and eliminate unnecessary noises.

Utility New Extra Axle  
Fits Any 1 1/2-Ton Truck

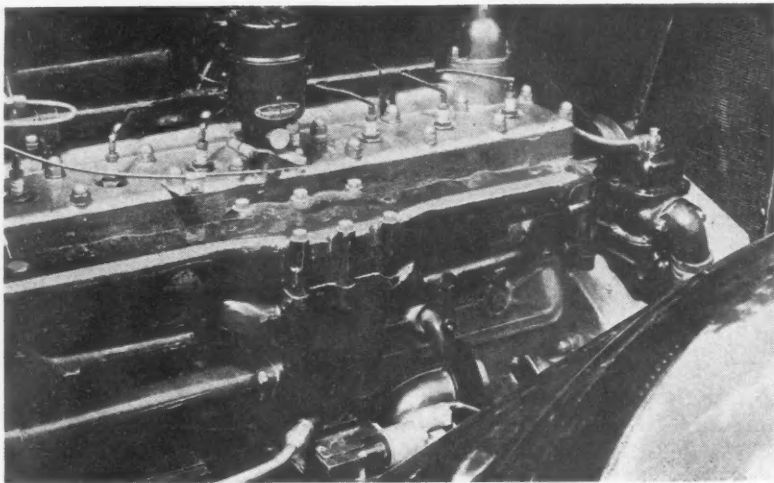
THE Utility Trailer Mfg. Co., Los Angeles, Calif., a pioneer in the field of 6-wheel attachments for heavy-duty trucks, has added another light duty attachment to its line. It is designated as Model 15 and is adaptable to all 1 and 1 1/2-ton trucks including the Ford and Chevrolet. This new model is almost identical with the heavy-duty attachments, being simply lighter in construction. Extra axle is carried in a bracket on the short end of two arms which rock on brackets attached to frame. Forward ends of these arms are attached to rear ends of truck rear springs by links, which replace the standard shackles.

This new model as well as other members of the Utility line are now available at the company's new factory warehouse in New York, from which all Utility distributors in Eastern centers will be served.



Utility Model 15  
1 to 1 1/2-ton six-  
wheel attachment

# REO'S NEW EIGHT AND SIX PLUNGE SAME SIZE BORES



**R**EO enters the eight-cylinder field with a four-tonner at \$3,070, which is \$195 more than the previous four-ton job, and also presents a new six-cylinder, two-ton truck listed at \$1,095. Under Reo's new ability rating system, announced last month, these trucks are designated 11,000-4¼-47 for the two-ton and 20,000-3¼-43 for the four-tonner, the first figure indicating the gross weight, the second figure being the grade in per cent that the truck can climb in high gear fully loaded with standard gear ratio and tire size, and the third being miles per hour at engine governed speed.

The eight-cylinder engine has the same size cylinders as the six used in the new two-tonner, 3½ x 5 in., with total displacement of 358 cu. in. The NACC formula horsepower is 36.48, torque 230 ft.-lb., actual hp. is 110 at 2800 r.p.m. Valves and manifold are on right, with camshaft driven by chain.

Crankpins and journals of the nine-bearing crankshaft are chromium plated. Main bearings are 2½ in. in diameter and total length is 12.53 in. Oiling system is of the full pressure type. Pistons are made of aluminum alloy. Carburetor is a Schebler 1¼ in.; Duplex supplies the fuel by a camshaft driven pump. The cylinder block is of chrome-nickel, as in all other Reo models.

Eight-cylinder engine used in Reo new 4-ton carries an air cooler forward at right. Carburetor intake imposes an S-shaped reversal of direction on incoming air. Beside it is the electro-vacuum governor

There are also two new devices on this four-ton model of unusual interest—an oil temperature regulator and a new type of governor, for which the claim is made that it eliminates lurching of the truck when the governor cuts in or out.

The oil cooler, which is located ahead of the engine in the cylinder water inlet pipe, consists of a core through which cooling water passes on its way from radiator to cylinder block. Around and through this core flows the oil.

The Electro-Vac governor on the four-tonner derives its name from the fact that, although intake manifold vacuum is used to close the throttle, actual control of functioning is electrical. A centrifugal unit is mounted on the distributor shaft below the rotor and when the governed speed for which the unit is adjusted is

reached, an electrical contact is closed, and a magnet opens a by-pass, allowing the manifold vacuum to operate on a piston in the governor casing, thereby closing the throttle valve.

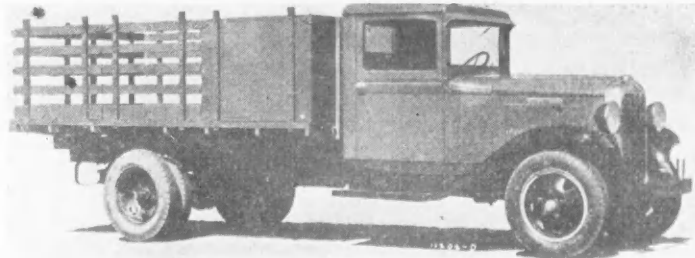
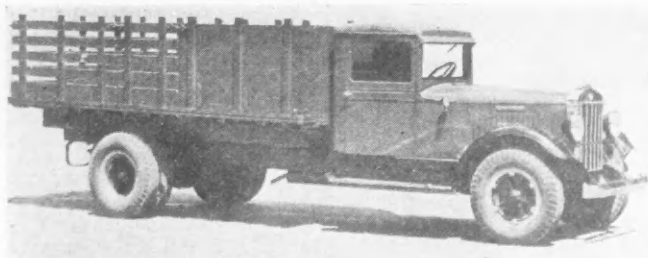
Four wheelbases are available in four-ton chassis, Model 4H, 150 in.; 4J, 170 in.; 4K, 190 in., and an extended wheelbase of 205 in. on Model 4M. There is also a special edition of the four-ton chassis which has a five-speed transmission, double-reduction rear axle with optional ratios of 7.00, 8.05, 8.5 and 9.43, air brakes and radius rods. List price of this model is \$3,645, and the rating is 20,000-3¼-38 as a truck and 32,000-2-36 as a tractor. Tractor rating of the 4-speed, bevel-drive chassis is 32,000-1½-43.

Unit-mounted, four-speed transmissions with low gear reduction of 6.6, full-floating, spiral-bevel gear rear axles, Hotchkiss-type drive, Ross cam-and lever steering gear and hydraulic brakes are used on both the two-ton and four-ton models. Clutch on the two-ton model is an 11-in. single-plate, that of the four-ton an 11-in. double-plate. Standard gear ratio of the two-ton is 5.83 and the four, 7.17.

Brakes on the two-ton are 15 x 2¼ in. at front and 16 x 2½ at rear. Corresponding dimensions on the four-ton are front, 16 x 2½, and rear, 17¼ x 4 in. Lining area of the former is 289 sq. in. and of the latter 390 sq. in. Hand brake on the two-ton is an external drum 8 in. in diameter and 2 in. wide, and on the four-tonner a double-shoe 14-in. disk.

Interesting on both new trucks are the cold-riveted frames, in which strength is obtained by extra stock thickness and unusually wide flanges rather than extensive depth. The frame of the two-ton model is 7 1/16 in. deep with 3-in. flanges, and that on the four-ton models 10 in. deep with 3¼ in. flanges. Width of frame on both models is 34 in., a dimension which is uniform throughout the loading space. Helper springs are placed above the axle on both models. Myers magazine oilers for chassis lubrication also are common to both models.

Left: Reo 4-ton eight, which lists at \$3,070. Right: Reo 2-ton six, priced at \$1,095





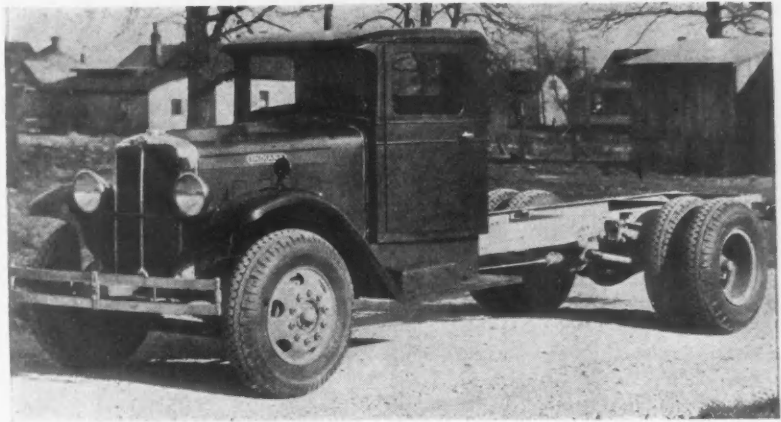
# INDIANA-DIESEL, AMERICA'S FIRST OIL BURNING TRUCK

INDIANA MOTORS CORP., Marion, Ind., is introducing the Diesel engine, which burns fuel oil instead of gasoline, to the truck field. This new truck, designated Model 47, which will be sold exclusively through the Indiana organization, has a nominal rating of 5-ton capacity with gross weight rating of 28,000 lb. as a truck or from 40 to 75,000 lb. in trailer combination. Chassis weight is 9100 lb.

The truck is equipped with Cummins-Indiana made Diesel engine, two-plate clutch, transmission with four or more speeds or an auxiliary, double reduction axle and air brakes. Tires are 10.50/20 balloon or 11.25/20 with dual rear tires in either case.

The engine is a six-cylinder, 4 7/8 x 6 in. developing 125 hp. at 1800 r.p.m. Weight is only slightly heavier than a gasoline engine of similar size and rating.

The fuel pump and governor are built as a single unit mounted on the left side of the engine, which is removable without disturbing other units. It is pressure lubricated from the main lubricating system of the engine. The fuel pump is of the Cummins distributor type which meters the charge to each cylinder by a single metering plunger for all cylinders. Oil is handled under relatively low pressure from the pump to an injector at the head of each cylinder. The injector comprises a nozzle with an annular passage at the lower end, a passage-way for fuel delivered by the pump and a cylindrical bore in which a plunger is moved up and down by a rocker arm and spring like a valve stem. On the intake stroke of the piston the plunger is moving upward and fuel enters the annular space. On the compression stroke hot air from compression is being forced upward into the fuel charge and the next charge



Diesel-powered Indiana Model 47, which has nominal rating of 5 tons with gross weight rating of 28,000 lb. as a truck or from 40 to 75,000 lb. in trailer combination. Tires are 10.50 or 11.25 balloons

is being heated. At the combustion point the injector plunger moves down forcing fuel into the combustion chamber where it burns. During the exhaust stroke the plunger is seated against the lower end of the injector, sealing the opening. Oil which is still present in annular space at the bottom of the injector thus being heated to insure better combustion when it is injected into the cylinder.

Cylinders and crankcase of the engine are cast integral of special alloy. Removable cylinder sleeves are employed. Crankshaft is carried in seven interchangeable type main bearings and is forged from alloy steel with

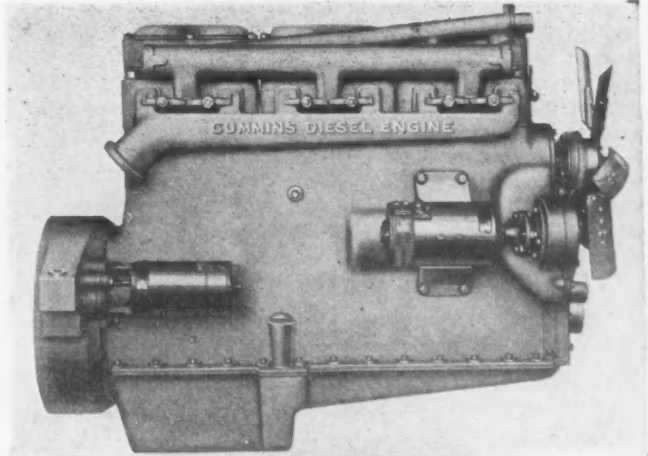
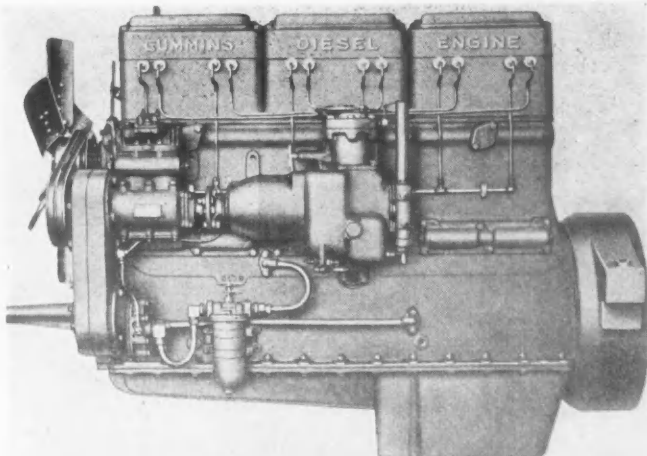
counterbalances. Connecting rods have centrifugally cast big end bearings and bronze bushings at the top, pressure lubricated through a rifle-drilled hole in the rods. Pistons are of alloy iron carrying four compression rings and one oil control ring.

Camshaft is supported on seven bearings and is drilled to serve as the main oil distributing line. The oil pump is mounted on the left side behind the timing gear case.

Water pump, which is integral with the fan, is driven by double vee belt from the accessory shaft. The water intake passage is cored to the block with the opening near the radiator opening.

Indiana is in position to make delivery of five Diesel engine units a week, and by the end of the current year will be able to produce ten Diesel trucks per day if the volume of business justifies. So far there is no indication of need of field service. However, the company is prepared to furnish experienced Diesel factory service men out of Boston, New York, Miami, Charleston, New Orleans, Los Angeles, Seattle and, in the central area, from its factory in Marion, Ind.

Left and right sides of the Cummins-Indiana Diesel. Cylinders and crankcase are cast integral. Fuel pump and governor are built as a single unit





## Aluminum Hands 28 Bodies 70,000 Lb. Extra Payload

CONTINUED FROM PAGE 21

The analysis of the survey, presented elsewhere on this page, shows the vocations for which they were designed, the extent to which aluminum was employed, weight comparisons and actual savings in weight by percentage.

Weight reduction is the primary reason given for the specification of aluminum in the construction of bodies of commercial motor vehicles. An Illinois operator desired to increase payload without exceeding the 24,000 lb. gross weight limit on four-wheeled vehicles in Illinois. By using aluminum, a 12,000 lb. payload was made possible without exceeding this weight limit. Had an ordinary steel and wood body been used, the loading would have been reduced by approximately 2000 lb.

The mill per ton mile tax which went into effect in Wisconsin the first of the year was the main reason for the aluminum body of the Oscar Mayer Packing Co. The 10-ton aluminum body equipped semi-trailers of



Auto Truck Equipment—Meat

the Motor Haulage Co., Inc., Brooklyn, were designed to permit registration at greater capacities. Aluminum, in the opinion of the Long Island Ice Corp., Riverhead, Long Island, N. Y., keeps the unit within highway weight limits without sacrifice of body strength. Weight reduction is a major factor with the Kendall Co., Bradford, Pa., gasoline distributors. The aluminum equipment of this company was designed to allow operation in three states having different weight restrictions. Even with increased payload made possible through use of aluminum, part of the payload of this unit must be dropped at one of the state boundaries to comply with the weight restrictions in the state being entered.

Some companies prefer to capitalize body weight reduction by employing smaller capacity trucks. The Corn Products Refining Co., New York City, added the saving of 1940 lb. on



Weicker—Refrigerator Service

its aluminum body to the saving of 1810 lb. obtained through the use of a smaller capacity truck, a total saving in gross weight of 3750 lb. The new equipment with the same payload and the use of pneumatic tires, resulted in maximum speed of 35 m.p.h. instead of 16, more than doubling daily mileage. Reduced license fee also was mentioned as an important factor by this company. The Coca-Cola Bottling Co. of Montgomery, Ala., took advantage of an 1100-lb. saving in body weight, in

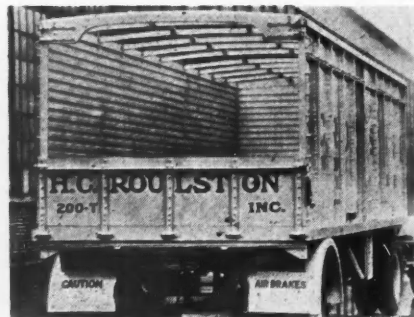


Auto Truck Equipment—Bakery

increased payload, carrying 25 extra cases with no increase in gross load. With the same payload as handled in the heavier type bodies this company could use a 3-ton chassis in place of a 3½-tonner.

The wish is to reduce operating expense by lowering the non-paying weight carried is notably present among the list of reasons. The value of this saving is becoming increasingly obvious to truck operators these days when operating economies frequently represent the difference between profit and loss. High first cost is not considered as a restraining argument by the operators because they are satisfied that the increased payload will quickly wipe out the difference in the initial cost. This is how Borden's Farm Products Co., Oakland, Calif., figures that it will take up the increased initial cost of aluminum body, approximately \$1,000. Assuming 25 cents per can per trip as cost of haulage, the increased payload of 50 cans nets a saving of \$12.50 per trip. In 80 trips, the additional cost will be written off. Oscar Mayer Packing Co., Madison, Wis., computes that in one year of 300 working days and at one trip per day, approximately 360 tons additional payload can be hauled in the aluminum body because of the saving of 2462 lb. in dead weight.

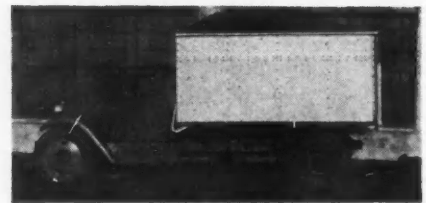
Besides permitting the carrying of larger payloads within weight restric-



Mack—Freight Transport

tions of the various states and helping operators to greater operating economies, aluminum is also favored for reasons of salvage, maintenance and serviceability. High reclamation value of aluminum is pointed out as an important salvage advantage. In maintenance low painting and repainting expense is emphasized by a number of operators. In calling attention to a noticeable decrease in maintenance cost of body finish the builder of a moving van owned by the Davidson Transfer and Storage Co., Baltimore, Md., explained that the body is simply finished with steel wool and a coat of clear lacquer. This finish is not only durable but attractive. Elimination of periodic painting cost is stressed by the Motor Haulage Co. The Davidson Transfer Co. also has preference for aluminum because the body is easy to keep clean and sanitary and because the smooth aluminum floor plates are a decided advantage in moving fragile freight.

The non-scaling characteristic of aluminum proved to be a distinct advantage to the American Oil Co., Baltimore. The Corn Products Refining

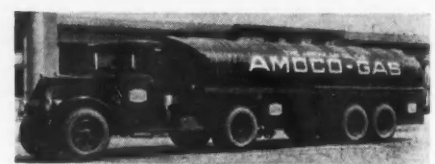


Heil—Coke and Coal

Co. indicates that aluminum does not discolor and contaminate its syrup shipments. An interesting observation emanating from the builders of milk tank trucks, is the fact that glass-lined tanks are obtainable only in cylindrical shapes, whereas aluminum tanks for milk transport can be obtained in elliptical shapes, thereby lowering the center of gravity—a preferable construction.

The extent to which aluminum is used in the bodies is truly amazing. Use of the material is not confined to just panels, plates and uprights but extends to a surprisingly large list of parts. A partial list follows:

Floor plates	Sheathing
Uprights	Bolsters
Roof rails	Manholes
Single panels	Domes
Double panels	Fenders
Structural shapes	Skirting
Corrugated decks	Carlines
Aluminum foil	Cowls
insulation	Cabs
Roof sheets	Tank valves
Racks	Ladders
Pans	Piping
Shelving	Hand rails
Tanks	Running boards



Davis—Gasoline Haulage



# One tells another

Bus and truck manufacturers have gone farther than usual this year to give their customers high-profit equipment—"standard-equipment" includes more than ever before.

Quite naturally, we have always felt that Lockheed Hydraulics would do more than their share in keeping the profits up on commercial vehicles; and a great many cost sheets have borne us out.

Apparently these figures have been talked about because a great many fleet manufacturers are specifying Lockheeds.

HYDRAULIC BRAKE COMPANY  
DETROIT, MICHIGAN, U. S. A.

## LOCKHEED HYDRAULIC

*Four* **BRAKES** *Wheel*





## AUTOMOTIVE FLASHES

### Hoover Selects Chapin

Roy D. Chapin, chairman of the board, Hudson Motor Car Co., has been named Secretary of Commerce by President Hoover, succeeding Robert P. Lamont. The appointment is a signal one for the automotive industry as it is the first time a cabinet portfolio has been bestowed upon a member of our industry. For years an active figure in international as well as national affairs pertaining to the automotive industry, Mr. Chapin is admirably qualified to occupy this post at this critical time. While only 52 Mr. Chapin has been active in automotive work for more than 30 years. He started at the Olds Motor Works, becoming its general manager in 1904. He was successively general manager of E. R. Thomas-Detroit Co. and Chalmers-Detroit Co. He became president of Hudson at the age of 30, resigning in 1923 to become chairman of the board. During the war he was chairman of the Transport Committee. In 1927-28 he was president of the National Automobile Chamber of Commerce. He is still active there.

### E. M. Sternberg Takes Helm

The LaFrance-Republic Sales Corp., recently acquired by the Sterling Motor Truck Co., will continue to function under the same name but with the following officials: E. M. Sternberg, president; H. C. Keenan, vice-president; W. G. Sternberg, vice-president; Oscar E. Held, secretary, and R. W. Stork, treasurer. Mr. Stork was treasurer of the acquired company. The entire operations have been moved to Milwaukee from Alma, Mich. Accounting and repair parts departments are expected to be transferred later.

### A Western Weapon

A non-profit cooperative association of freight transportation companies operating in California was recently incorporated by Reginald L. Vaughan, chairman of the carriers interested in the project. The purpose of the new organization, known as Regulated Carriers, Inc., is to aid in enforcing all laws relating to all kinds and classes of carriers of property and to promote, improve and protect transportation within the state.

### Truck Accidents Drop

The commercial vehicle accident rate was lower in 1931 than 1930, according to compilations just completed by the National Safety Council. Analysis of the accident experience of 151 fleets revealed that the rate per 100,000 vehicle miles in 1930 was 6.64

against 5.84 in 1931. In addition, the report presents the 1931 accident experience of 499 fleets of all types operating 33,000 vehicles and covering 443,000,000 miles during the year.

### Brockway Completes Reorganization

A plan for the financial reorganization of the operating activities of the Brockway Motor Truck Corp. has been completed and approved by two-thirds of the stockholders. Under the plan the new operating company, Brockway Motor Co., Inc., will acquire from the former company all its operating assets and assume all its current debts, current contingent liability, etc. Operations will be continued by the new company without interruption in production, sales and service.

### Violators, Beware!

The Pennsylvania State Highway Patrol has been aggressively following up transgressors of the truck law. Owners of 2209 passenger cars converted into trucks by mounting truck bodies have been notified to reclassify them as trucks and pay commercial car taxes. During the first half of the year 218 truckmen were arrested for exceeding legal weight; 56 for violating length and width restrictions and 408 for speeding.

### Reelected for Another Year

All officers of the National Team and Motor Truck Owners Assn. were reelected at the 30th convention of that body. They are: James M. Naye, Phila., president; H. H. Barton, Kansas City, first vice-president; E. Foster Moreton, Detroit, second vice-president; W. J. McDevitt, Cincinnati, treasurer, and J. P. Cavanaugh, Philadelphia, secretary.

### Stainless Steel Plate

A two-ply stainless steel, in which a stainless surface is bonded on a carbon steel back, has been perfected by the Ingersoll Steel & Disc Co., Chicago, Borg-Warner division. The new metal, known as Ingoclad Stainless Steel, has countless applications where corrosion resistance, strength and finish are desired. The material, economical in cost, may be deep drawn, stamped, welded, formed and polished.

### Looks Good

Dodge Brothers Corp. upon studying U. S. registrations and its own production records found that as of Dec. 31, 1931, 70.5 per cent of all Dodge trucks produced since 1914 for domestic distribution were still being used.

### Money for Highways

The relief bill passed by Congress provides for \$132,000,000 for highway construction, \$120,000,000 to be used on public roads and the remainder for national forest highways.

### Trailer Association Forms

Final organization of the Trailer Manufacturers Assn. is scheduled for a meeting in Chicago, Sept. 20. At the preliminary meeting in Detroit it was definitely decided to reorganize this association and by-laws were adopted. The association aims:

- (1) To promote and encourage the trailer industry.
- (2) To promote and support the introduction of equitable and fair legislation and reasonable taxation.
- (3) To aid in securing enactment and maintenance of uniform laws relating to the use of trailers.
- (4) To assist and support movements for greater safety of highways.
- (5) To enable members of the association to become affiliated with the National Automobile Chamber of Commerce through the Motor Vehicles Conference Committee.

Membership is open to all manufacturers of trailers, trailer parts and accessories. Harvey Fruehauf was appointed temporary chairman.

### Transportation Meeting

The National Transportation Meeting sponsored by the Society of Automotive Engineers will be held at Toronto, Oct. 3, 4 and 5.



## PERSONNEL CHANGES

★Bert Dingley, new vice-president of the Marmon-Herrington Co., makers of all-wheel drive trucks, has been placed in charge of sales.

★E. W. Winana has been appointed chief engineer of Federal Motor Truck Co., succeeding George B. Ingersoll.

★L. E. Judd, former editor of the Akron Times-Press, has been appointed director of public relations of the Goodyear Tire & Rubber Co.

★C. C. Buckborough has been named assistant manager of the Detroit branch of the Reo Motor Car Co.

★Perry Dean has been appointed manager of the truck department of A. T. Hansford Co., Minneapolis distributors of Dodge.

★Frank A. Scott was elected chairman of the Board of Directors of the India Tire & Rubber Co.

★N. W. Eagles, Detroit Leland Hotel, old-timer, has entered the consulting truck engineering field.

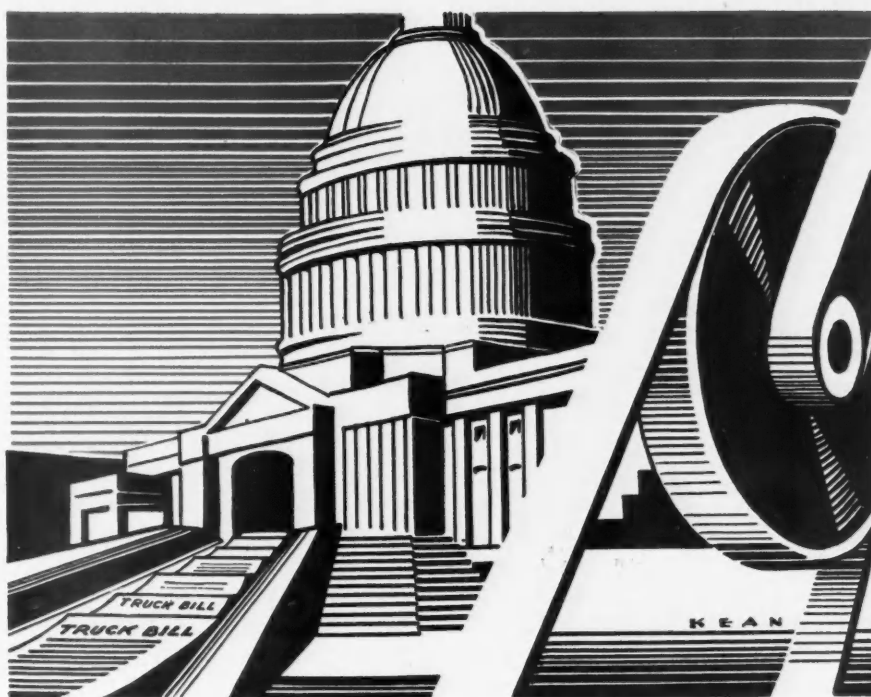
★Ray W. Sherman has resigned as editorial director of the Hearst business magazines.

# ANOTHER BATCH OF GRIST FROM LEGISLATIVE MILLS

Courts Pass on Several Laws: Montana Tribunal Rules Contract Carriers Do Not Need Certificates

## A Service for Readers

Commercial Car Journal is prepared to serve readers who desire legislative information pertaining exclusively to motor trucks. State your problems clearly and in detail and address your communication to the Editor. Replies will be mailed as quickly as the information can be procured.



TWO legislative queries submitted by readers are of such general interest that the answers are published here. The answers come from the Motor Vehicle Conference Committee.

## Governors

**Question:** What states have enacted legislation making compulsory the use of engine governors on trucks?

**Answer:** "Kentucky has for a number of years had a law requiring the use of governors on trucks, but the law has never been a success and its enforcement has been even more of a failure, because the speeds at which these trucks must be governed are so low that the engines will not drive fast enough to get the heavier trucks up hills or out of holes in low gear. There have been spasmodic attempts to enforce the law, but the result has always been the same.

"Last year there were many bills introduced providing for governors, but so far as we know none of these became law. This year Kentucky provided that all trucks and semi-trailers must be equipped with governors (Senate Bill 101, effective June 18) and so far as we know no other state passed similar legislation."

## Flares or Fuses

**Question:** What states require the use of flares or fuses as a signal light to be placed as a protection against

accidents when a motor truck is compelled to stop after dark? We understand Michigan, Kansas and Pennsylvania and some other states have such laws.

**Answer:** "Last year there were many bills introduced requiring the carrying of 'flares or fuses,' but to our knowledge none of those laws became effective.

"We do understand, however, that there are several states requiring that flares or fuses be carried, but these are under the rulings of the Public Utilities Commission, or whatever commission has charge of trucks and buses, and of these rulings we do not have an up-to-date compilation."

Following are some of the court rulings, legislative enactments and proposed bills reported from various states:

## Florida

The City Grocery Co. and the Winn-Lovett Grocery Co., Jacksonville, failed to obtain an injunction in Federal Court against two Florida laws regulating load weights to be carried by motor trucks. Injunction was sought on the ground that the acts involved the Federal Constitution in that they discriminated between private carriers and public carriers in favor of the latter. Similar proceedings were introduced in state courts, but the Florida Supreme Court upheld both acts.

## Indiana

Bill No. 701, smacking beautifully of railroad influence, was introduced in the House during the special tax relief session. It applies to all forms of hauling, common and contract of both property and passengers, and hits the private owner who ventures more than 10 miles beyond the corporate limits of the city in which he resides. The bill empowers the Public Service Commission of Indiana to demand proof of convenience and necessity and to deny certificates "in case it appears from the evidence that the service fur-

nished by existing transportation facilities is reasonably adequate"; to "fix and approve reasonable maximum or minimum or maximum and minimum rates, charges, classifications and rules and regulations pertaining thereto." The bill compels operators to keep daily records on prescribed forms and, in addition to the regular license tax, personal property tax, gasoline tax and all other taxes, compels common and contract carriers to pay a 5 mills per gross ton mile tax computed as follows: "Two hundred per cent of the rated capacity of each property vehicle, plus the weight of the vehicle, shall be multiplied by the number of miles the vehicle is operated and the amount thus obtained divided by two thousand." (On this basis, one truck manufacturer has figured out 60 cans of milk hauled from Lafayette to Indianapolis would be taxed \$7.07, and the return trip with the empty cans would cost another \$7.07, making the round-trip tax a total of \$14.14. The tax on 10 hogs shipped from Connersville to the Indianapolis stock yards would be \$19.50.) The law also required liability insurance but not cargo insurance. All provisions of the law apply to privately owned trucks when they operate beyond the prescribed 10-mile radius. The act does not apply to the transportation of livestock and farm products to market by the owner thereof or supplies for his own use in his own motor vehicle. (Figured on the basis of a privately owned three-ton truck making a 200-mile trip in a day, the tax would be \$11.)

## Louisiana

The Governor has signed three laws dealing with truck regulation and taxation. One law places contract and common carrier trucks in the same class for taxation purposes and levies a tax substantially equal to that now paid by the common carrier. Heretofore, contract carriers took licenses applying to privately owned trucks. Another law fixes limits for size and weight and places full authority for highway traffic control with the State Highway Commission. The licensing law fixes a rate of 68 cents per horsepower on all trucks. In addition, privately owned, pneumatic-tired trucks are charged an additional sum for net carrying capacity. This ranges from \$5 for net carrying capacity up to 3000 lb., all the way to \$32 for net capacity between 8001 and 10,000 lb., and \$150 for each 1000 lb. above that. The net carrying capacity weights applying to contract and common carriers are slightly lower than charges made heretofore, but they have had tacked on to them a compensation tax "for the use of public roads, highways and bridges" an additional amount equal to one-half the other licenses collected.

## Massachusetts

The editor of Commercial Car Journal has received the following letter from R. L. Devine, supervising inspector, Equipment Section, Massachusetts Department of Public Works: "I am enclosing for your information a bulletin of maximum limits of dimensions, weights and loads of commercial vehicles operated in this state. You undoubtedly have this information



already, as the width for vehicles operated in Massachusetts appears in the July issue as 96 in. for solid tires and 102 in. for pneumatic tires. Some motor truck companies in this state have interpreted this 102-in. limit as including the body.

"I merely wish to call to your attention the fact that the body width in this state is still limited to 96 in. The 102 in. refers merely to pneumatic tires, that is, when pneumatic tires are used, they may exceed the 96-in. limit, but under no consideration may the body width be in excess of 96 in. without a special permit from the Department of Public Works."

#### Mississippi

Following are new laws enacted in Mississippi:

S. 63—Size and weight restrictions, etc. Maximum width, 96 in. "measured 4 ft. on either side of the center line of the vehicle." Height 12 ft. 6 in. Length, 33 ft. single unit, 50 ft. combination of units. (Does not apply to combination operated exclusively within corporate limits.) Weight—Any single unit, 14,000 lb. net load and/or 22,000 lb. gross; combinations, 30,000 lb. gross; one axle, 12,000 lb.; weight per inch of tire, 700 lb. All vehicles having a gross weight of over 2 tons must have pneumatic tires after May 18, 1933. Brakes—No motor vehicle shall be operated (outside corporate limits) drawing any other vehicle or vehicles weighing over 3000 lb. "unless said motor vehicle shall be equipped with brakes operating on the wheels of at least one axle. The brakes on all such motor vehicles shall be of such type, and so constructed and connected, that the driver can apply all of said brakes from the cab of such motor vehicle by a single operation and shall be of sufficient capacity and of such area and dimensions as to stop said vehicle within a reasonable distance." (Note—The foregoing apparently intended to require brakes on at least one axle of all trailers and semi-trailers. Its interpretation by the enforcement officials will, of course, be controlling. Lights—All trucks having over-all length exceeding 20 ft. and maximum width exceeding 7 ft. must have following lights when operating outside corporate limits: 3 green lights in front, near top, in horizontal line, 6 in. apart; 3 red lights in rear, near top, in horizontal line 6 in. apart. All shall be visible at least 200 ft. Also required — 1 yellow clearing light or amber tinted reflector on lower left front corner of vehicle or combination, and one red reflector 12 in. from the lower left rear corner of each such vehicle or combination. Weight Tags — All trucks and trailers (operating outside municipalities) shall have attached a tag giving the class or weight and the manufacturer's rated loading capacity, followed by the words "Issued by State of Mississippi." Hours of Labor—Prohibits any person from operating and any owner from requiring any employee to operate a truck on a state highway for more than 12 hours out of each 24 hours, or elsewhere for over 16 hours without a rest or relief. Trailers—Trailers and semi-trailers weighing over 3000 lb. unloaded must be so coupled as to prevent deflection of over 6 in. from path of towing vehicles. Also trailers having a gross

weight exceeding 1 ton shall be affixed to the vehicle drawing them with safety cables or devices, attached to the corners of the trailer frame, of sufficient strength to draw the trailer if the regular coupling breaks or becomes disconnected. Exemptions—None of the foregoing applies to vehicles or trailers owned or operated by farmers or owners of farm land when transporting agricultural products, livestock, wood or timber of any kind incidental to the use or ownership of such farm lands nor to vehicles transporting timber in an unmanufactured state, cross ties, piling or gravel.

S. 523—Any non-resident operator, except one registered in Mississippi or a common carrier operating under a Mississippi certificate of convenience and necessity, must obtain a permit upon entering the state and pay the mileage fees set forth in Senate Bill No. 201. Minimum fees ranging from \$2 to \$5 according to capacity of vehicles are set forth in the act.

S. 201—Increases registration fees and mileage taxes on trucks and trailers. Both are computed on the basis of capacity. Computation is much too lengthy for publication here. Operators affected should procure copy of law from state.

H. 660—Yearly privilege taxes, based upon location, are provided for all businesses. Automobile dealers, \$40 to \$200 per year. Repair shops, \$15 to \$50. Garages, \$50 to \$200. Automobile service establishments, \$5 to \$25.

H. 688—Increases the state tax on gasoline from 5½ cents to 6 cents per gallon.

#### Montana

The Montana Supreme Court has ruled that provisions of the 1931 Montana regulatory law requiring private contract carriers to obtain certificates of public convenience and necessity are invalid. This requirement was held to contravene the Fourteenth Amendment. The case was that of Board of Railroad Commissioners et al. v. Barney, No. 6982. The plaintiff application for a certificate was protested by rail carriers and denied by the board.

#### New Jersey

Effective Jan. 1, 1933, New Jersey will require signalling devices approved by the Motor Vehicle Commissioner on all trucks not specifically exempted by the Commissioner, as a prerequisite to registration. The law does not specify what kind or type of device will be used except that it must be lighted at night and clearly discernible from a distance of 300 ft.

#### New York

As a result of a ruling by the Attorney-General the reduction from 85 ft. to 65 ft. in the allowable length of combinations in New York State will become effective Jan. 1, 1933. A previous law specified July 1, 1932.

#### Ohio

The Public Utilities Commission has the right to exclude additional motor transportation companies from particular state highways when it is found that a portion of such route is so badly congested that the proposed increase in service would create an undue hazard, according to a decision of the Ohio Supreme Court.

#### Pennsylvania

Bills introduced in the House seeking to change the method of registration from chassis weights to maximum gross weights, reducing the maximum weights and increasing fees from 25 to 50 per cent, were side-tracked when the House Ways and Means Committee voted against reporting them out. Another bill limiting reciprocity for truckers of other states to 15 days in any calendar year was favorably voted out by the committee and passed by the House. It passed readings in the Senate and was referred to the Senate Committee on Public Roads. Truckmen view this reference hopefully because it was originally believed the bill would be referred to the Finance Committee and there looked upon with favor. In the hands of the public roads committee they expected a more impartial treatment and therefore a 50-50 chance of winning the argument.

A bill introduced in the Senate and designed to empower each city of the first class to impose annual license taxes on all motor vehicles is in a "status quo" which has relieved truckmen of worry. You can define "status quo" to your own liking.

#### West Virginia

The following bills have been introduced in the West Virginia Special Session; which convened July 12:

H. 36-S. 17—Proposes taxing six-wheel vehicles twice the present registration fee and eight-wheel vehicles two and one-half times the present fee.

H. 37-S. 16—Imposes a tax of \$100 per 1000 lb. gross weight on vehicles in excess of 15,000 lb.

H. 38—Proposes taxing motor vehicles wider than 7 ft. 25 per cent more than present fee; vehicles in excess of 10 ft. high 10 per cent additional for each foot over 10 ft.; vehicles over 25 ft. long 10 per cent additional for each foot over 25 ft.; combinations over 50 ft. long 10 per cent additional per foot over 50 ft. (Present law permits vehicles to be 8 ft. wide, 12 ft. high and 33 ft. long, combinations are permitted 85 ft. in length.)

H. 39—Would prohibit any vehicle with its load from being more than 10 ft. high or 30 ft. long. Combinations would be limited to 50 ft. in length. Also would prohibit load from extending more than 2 ft. in front of the vehicle or to the rear beyond the fenders.

H. 48—Imposes privilege tax on gross incomes. Among others are manufacturing companies 21 per cent; sales of property 2 per cent; street railways and other utilities 4 per cent, and other companies 3 per cent.

## Waukesha "Full Power" Engines Have F Heads

CONTINUED FROM PAGE 37

pany, and associates in both combustion chamber design and metallurgy, and is a development of the Ricardo principle. The new materials were evolved to take advantage of research findings.

Waukesha Alloy 221 is a special alloy iron with a tensile strength of 50,000 lb. and hardness of 250-280 Brinell used in cylinder castings. Another iron alloy with low "growth" factor was developed for manifolds.

General design of the three engines is similar and the following description apply to all except as noted.

Crankcase and cylinders are made of the 221 Alloy. Crankcase is of girder construction with bearing cross walls and internal ribs tied to side walls. There is a large base flange and a reinforcing wall back of valve cover doors.

Interchangeable type main bearings, four in the 6-90-225 model and seven in the other two, carry the crankshafts. Bearing diameters are 2½ in., 2⅜ in. and 3 in. respectively and crankpins are 2¼, 2½ and 2¾ in. respectively for Models 6-90-255, 6-110-358 and 6-125-462.

Connecting rods are rifle drilled for piston pin lubrication. Pistons are made of aluminum alloy cast without struts and carry three compression and one oil ring. Piston pins float.

Oil is passed through a series filter and oil cooler to main, connecting rod, camshaft, piston pin, rocker arm and water pump drive shaft bearings and idler gear. A filter patented oil level equalizer prevents clogged lines.

Water pump, which has a nitralloy shaft, forces water around valve seats and throughout the full length of the combustion chamber.

Intake valves made of chrome nickel steel with hardened end are placed in the head directly above the piston. They carry dual valve springs. Rocker arms are enclosed and a self-aligning contactor minimizes side thrust on valve stems. Exhaust valves of Silchrome are at side in cylinder block.

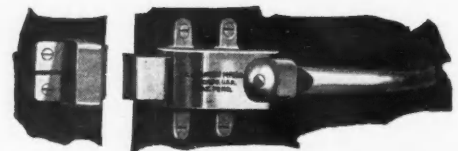
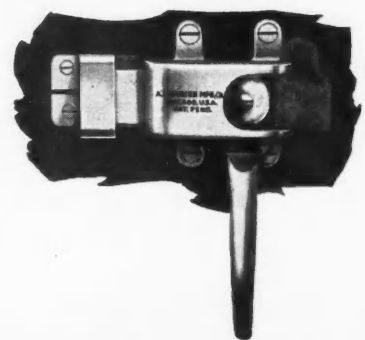
Timing gears are helical cut, crankshaft and pump drive gears are of mild steel, camshaft and idler are Waukesha alloy 221.

Flywheel housings are demountable, permitting use of other sizes than standard. Provision is made for mounting all standard accessories such as air compressor, air cleaner, fuel pumps, oil coolers, etc.

#### Hansen Slam-and-Take-Up Door Lock

A NEW slam-and-take-up lock for small refrigerator doors is announced by the A. L. Hansen Mfg. Co., Chicago. This lock embodies two new principles—first, it is designed to slam, take-up and compress; second, its striker bolt "cocks" just like the ham-

mer of a gun when the door is opened. Upon closing the door the bolt strikes the striker plate and releases the stored-up energy in a trigger-like fashion. The compression action of the lock is obtained by the cam-leverage action of the handle. When the



door is closed the handle wedges itself behind the hasp with each jar of the truck, thus making it impossible for the handle to jolt out when truck is moving. By forcing the handle the door is compressed into air-tight position. The door can be padlocked. In addition to these new features the lock also embodies the lug-leverage principle in use for two years on other types of Hansen locks.



# Pay for 'em with tire savings!

## **TIMKEN TUBULAR TRAILER AXLES**

One pair of proper size tires and tubes will pay for a Timken Tubular Trailer Axle—because Timken Tubular Trailer Axles are increasing tire mileage on trailers by keeping the tires in perfect alignment to wear uniformly.

There's your financing problem solved.

The irregular tire wear, with consequent short life, on many trailers is due to the trailer axle design. Timken's tubular design and strict maintenance

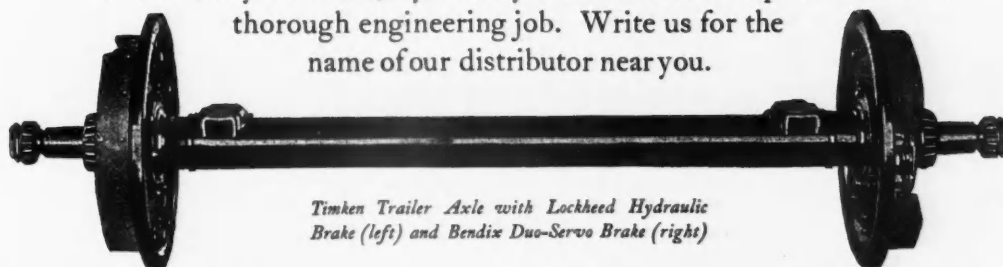


of quality throughout represents the first step forward from a conventional wagon axle. These axles are vastly better—much greater rigidity, much less deflection; greater strength, both in load capacity and resistance to braking torque.

Timken Tubular Trailer Axles are fully equipped with brakes—any type specified; or can be furnished without brakes.

You really can't afford not to specify these axles on new trailers. Nor can you afford not to equip your present trailers with them.

It can easily be done; by factory trained men competent to do a thorough engineering job. Write us for the name of our distributor near you.



*Timken Trailer Axle with Lockheed Hydraulic Brake (left) and Bendix Duo-Servo Brake (right)*

THE TIMKEN-DETROIT AXLE COMPANY, Detroit, Michigan

# TIMKEN AXLES



## Highway Users Unite to Fight 1933 Tax Battles

CONTINUED FROM PAGE 16

There will be no dues or assessments on members of this informal Highway Users Conference, which will meet only once or twice a year and which will be supported, it is understood, by voluntary contributions. It would appear that the main function of the conference will be to collect and disseminate to its members information concerning proposed and current legislative matters, both state and national, which may affect the regulation or taxation of motor vehicle units, parts or operations.

Further evidence of industry's realization of the need for action in advance of 1933 appears in the special efforts being made to stimulate and amplify the work of various truck owners' associations. The new program involves support of state truck association activities by truck manufacturers, automotive parts companies, large truck operators and others. Individual truck manufacturers in many cases have already expressed a willingness to foster and aid actively the state truck owner association development in their own states and definite means of taking action along these lines is now being discussed.

Indications are that this development may proceed along the lines of the "Ohio Plan," so-called because it is a program which has been worked out for possible coordination of truck associations in that state. The plan is designed to bring the existing associations in Ohio into a single strong state association.

### Ready to Go

Financial support having been assured by the means indicated in the preceding paragraph, the staff of the new organization will be free to devote its time to the work of promoting truck owners' interests, providing legislators with facts desired about the truck situation and rendering full and continuous service to the entire membership.

District offices are contemplated, where necessary, thus insuring prompt service to all members. The board of directors of the state association will probably consist of two representatives of each of the local chapters which will be established throughout the state and of such others as may be needed to include the best interests of the industry. Association officers will be elected by the board of directors.

Even the engineers of the motor vehicle industry have awakened very fully to the importance of the legislative struggles which lie ahead. They see their design activities being circumscribed by inflexible regulations, their production economies endangered

by a multiplicity of conflicting laws and their economic future limited as well. Clear evidence of this appeared at the recent Summer Meeting of the Society of Automotive Engineers held at White Sulphur Springs last month. It was down at White Sulphur, one historically minded engineer learned this year, that the Governor of North Carolina made his now famous observation to the Governor of South Carolina that: "It's a long while between drinks."

### Ominous Signs

So, a few weeks ago automotive engineers made other important observations on that historic spot. F. C. Horner, General Motors Corp., gave warning of many perils in sight. "The time was never so opportune," he said, "for railroads to force through legislation against motor transportation. Forty-two legislatures meet next year. And the railroads have the automobiling public with them. We are headed for a lot of trouble."

He with several others pointed out that the recent decision of the U. S. Supreme Court in the Texas case upholding the right of a state to legislate against motor transportation for the benefit of the railroads opened up the way for similar action by other states.

"Expansion of use of heavy duty high speed units is ended," he predicted, commenting on a statement that trailer operating speeds had reached a figure which was bringing about the use of streamlined bodies. Part of the blame for adverse legislation belongs to truck operators, in Mr. Horner's opinion, because of abuse in truck and trailer use.

Two representatives of large fleet organizations, J. F. Winchester, Standard Oil Co. of N. J., and Leo Huff of Pure Oil Co., observed that snaking of trailers, making it almost impossible for passenger cars to pass, aroused resentment in the minds of the driving public resulting in unfavorable opinion in legislative halls. Two other fleet men, A. F. Coleman, Standard Oil Co. of N. Y., and F. K. Glynn, American Telephone & Telegraph Co., also discussed legislation, Mr. Coleman urging procurement of legislation to permit operation of tractor and trailer trains up to 65 ft. overall length, and Mr. Glynn telling of the work of the S.A.E. code committee, in compiling information on which a code could be based.

Martin L. Pulcher, president of Federal Motor Truck Co., denounced the railroad legislative program against truck and bus operators.

"Now, with 25 per cent of the new Federal revenue bill charged directly against users of cars and trucks," he said, "and in the face of excessive levies against motor vehicles by every state in the Union, the railroads are

pressing their restrictive legislative measures in almost every state.

"Everyone interested in the industry will do well to interest themselves in this serious matter, and stand ready to aid the National Automobile Chamber of Commerce in every possible way.

"It is true that the railroad business is poor—but all business is poor these days. The motor vehicle industry gives the railroads annually far more freight than is being taken from them by our industry.

"Now, to carry on this fight, the industry is underwriting a nationwide campaign to bring into the fight against higher taxes and more restrictions operators and users of motor vehicles."

Bearing definitely on the promotion of constructive legislation was the agreement by members of the S.A.E. Motor Vehicle Code Committee on what constitutes proper length, height, and weight restrictions. To insure complete agreement, the conclusions reached by the committee meeting at White Sulphur have been sent to the entire membership of the committee for a mail ballot. If approved, the S.A.E. recommendations will be submitted to the Motor Vehicle Conference Committee of which the S.A.E. has lately become a member.

Another aspect of indirect relation between the society and possible legislative activity has been through the road impact tests. The Highway Research subcommittee at its White Sulphur meeting approved the results of the latest set of impact tests.

Arthur J. Scaife, president of the society, pointed to the growing public antipathy to heavy-duty trucks and trailer trains which are operated by careless drivers. "This reaction is especially acute on week-ends and holidays when the roads are full of motorists. Road hogs driving burden vehicles are making it easy for legislators to legislate against trucks."

### Education Will Win

And so throughout the country and throughout the industry those interested in the sound economic development of motor vehicle design and motor vehicle operation have become aroused to spread correct and accurate information about highway usage problems and, where necessary, to fight effectively for their rights.

### A Big Order

Dodge Brothers Corp., truck division, several days ago delivered to the Pennsylvania Highway Department a fleet of 100 1 to 1½-ton four-cylinder trucks.

### A 22.5 Per Cent Gain

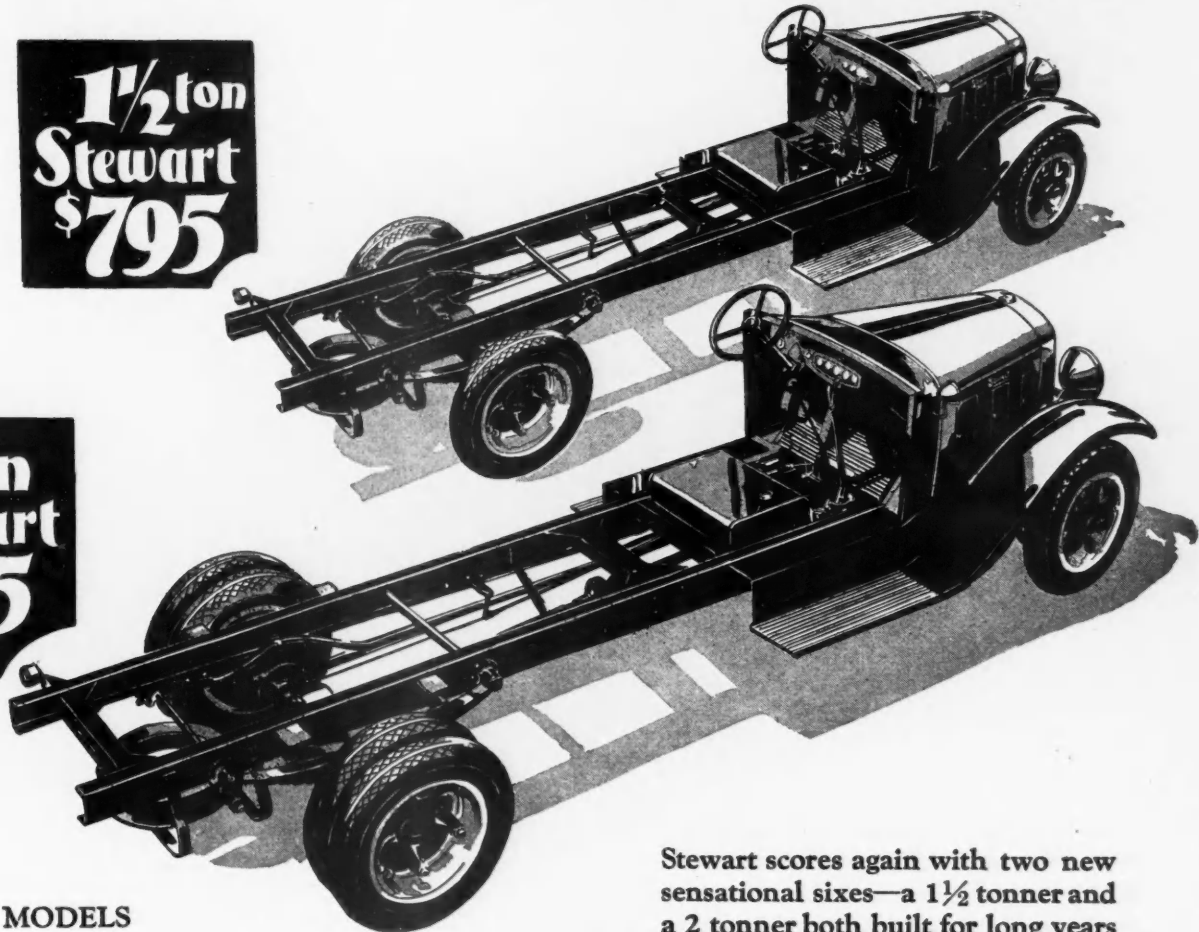
Reo commercial vehicle sales for the year ended July 1, 1932, have exceeded those of the previous year by 22.5 per cent.

# 2 NEW STEWART TRIUMPHS

Honest Trucks-Honestly Rated-Honestly Priced

**1½ ton  
Stewart  
\$795**

**2 ton  
Stewart  
\$995**



## MODELS Bevel Axle

	Chassis Prices
1 ton, 4 Cylinder.....	\$ 695
1 ton, 6 Cylinder.....	795
1½ ton, 6 Cylinder.....	795
1½ ton, 6 Cylinder.....	995
2 ton, 6 Cylinder.....	995
2 ton, 6 Cylinder.....	1195
2 ton, 6 Cylinder.....	1695
2½ ton, 6 Cylinder.....	1990
2½ ton, 8 Cylinder.....	2390
3 ton, 8 Cylinder.....	2990

## Worm Axle

*3 ton, 6 Cylinder.....	\$2690
*3½ ton, 6 Cylinder.....	3690
*3½ ton, 8 Cylinder.....	3990
*3½ ton, 6 Cylinder.....	3990
*5 ton, 6 Cylinder.....	5190
*7 ton, 6 Cylinder.....	6190

\*Double Reduction or Worm  
Rear Axle Optional

All Prices f.o.b. Buffalo, N. Y.

Stewart scores again with two new sensational sixes—a 1½ tonner and a 2 tonner both built for long years of constant, faithful service. Never in Stewart's history have we been able to offer so much truck for the price.

Like all Stewarts, they have all the latest known worthwhile mechanical improvements plus Stewart time-tested features. Stewart world-wide reputation for long life, low repair bills and less cost to run is now available at these low prices.

# Stewart

MOTOR TRUCKS

STEWART MOTOR CORPORATION  
BUFFALO, N. Y.

Cables:  
Stewartruk-Buffalo

Codes: Acme, Bentley's (Complete Phrase)  
Bentley's (Second Phrase), Universal Trade  
Code, A.B.C. 5th Imp. (5 and 10 letter)

## Stewart Trucks have won—By costing less to run



## Store-Door Delivery Plan Worries New York Truckmen

CONTINUED FROM PAGE 22

some of the saving in operation direct to the consignee, permitting him to take delivery with his own trucks, or by arrangement with his own truckman.

"In other words, the new tariff, instead of agreeing to deliver to the store door for a plus charge, would lower the tariff provided delivery is taken or made at railhead, or such other point to be optional with the railroads.

"If the objection be raised that something along the lines suggested is unlawful, the answer is that such a provision has been in the tariff for years applying to certain commodities when delivery of the same is taken on the Jersey shore.

"This system would not cost the railroads any more, since they merely allow, under certain conditions, a reduction in the freight equal to what they intend to pay the truckman. We are certain that the shipper will be better satisfied, it isn't store-door delivery, of carload freight he wants; it is reduction in cost.

The alternative suggestion pointed out that if the above was not acceptable there is only one way to avoid disturbing the trucking equilibrium in New York: "All responsible truckmen should be placed on an equal basis. Upon complying with reasonable regulations, including the filing of a bond, in such amount as you may decide, any truckman upon his application should be placed on the list of store-door-delivery truckmen."

"It is self-evident that this alone will not be enough to prevent the disruption that followed constructive stations delivery.

"As a correlative to this, a consignee must have the right to designate any truckman who has been placed on the list as the one he desires to handle his shipment. The designated truckman handles the shipment after being designated by the consignee and bills the railroad for the tariff rate, plus such part of the haul as the railroad assumes. There can be no possible objection to this. If the service is not satisfactory, the consignee can blame only himself. Only by such a system can the service be a success and can disruption be avoided.

"Where the consignee has no preference as to truckman, the railroads should designate one from those on the list. In that event, we request the distribution be as evenly made as possible."

The rates for trucking under the plan, as announced by Vice-Chairman Lawrence, caused some shipper representatives to declare flatly that the plan would not result in additional business to the railroads. To such comment, Mr. Lawrence declared that a number of things about the proposal required revision and this probably went for rates, too.

Hugh E. Sheridan, president of the Merchant Truckmen's Bureau, told Mr. Lawrence he was unable to see what saving the plan would give to shippers, pointing out that consignees now have newsprint trucked for lower rates than those sponsored by the railroads in the plan. Other speakers demanded to know just why, in view of the trucking rates given, the railroads were inaugurating store-door service. Mr. Lawrence's answer was that the shippers were clamoring for it and the roads wished to give shippers what they wanted. He added: "It probably will result in some economies to the carriers, as well."

To a direct question by Mr. Nelson, as to who would perform trucking for railroads, Mr. Lawrence replied:

"A number of agencies will perform this service; anyone able to perform it might do so. Perhaps one central bureau could do it for all the carriers." This was taken as an encouraging note, and another happy echo came when railroad representatives appeared pleased as Mr. Nelson emphasized the fact that local truckmen were complements to the railroads and wished to continue to be so.

The rates promulgated for trucking in the metropolitan area for non-perishable goods, follow, and apply to Manhattan, south of 181st Street, and the Bronx, south of 172nd:

Six cents per 100 lb. when the consolidated freight classification minimum is 36,000 lb. and over per carload; 7 cents per 100 lb. when the minimum is 30,000 to 35,999 lb.; 10 cents per 100 lb. when the minimum is 24,000 to 29,999 lb.; 14 cents per 100 lb. when the minimum is 20,000 to 23,999 lb.; 16 cents per 100 lb. when the minimum is 18,000 to 19,999 lb.; 18 cents per 100 lb. when the minimum is 14,000 to 17,999 lb., and 20 cents per 100 lb. when the minimum is 10,000 to 13,999 lb.

The railroad announcement added that: "In the interest of uniformity, a single agency tariff will be published for account of all New York roads."

After the formal store-door plan announcement, a number of interrogators brought out from Mr. Lawrence that in addition to the foregoing rates, there were other rates, both plus and minus, effecting certain commodities. These included a 5 cents a hundred on newsprint; 5 cents on flour; 8 cents on skid paper and bales of rags; automobiles 25 cents with a minimum of \$10; van bodies the same; machinery in excess of 1500 lb., 18 cents, and silk 15 cents a hundred, plus 10 cents (as we got it) per \$100 on valuation. Live stock and bulky freight, such as brick and coal, would not be handled under the plan, it was announced.

It was further made known, although quite sketchily and shot out plenty fast, that for trucking anything in excess of two miles from the waterfront or Group A Stations, an additional charge of 1½ cents per hundred for each mile or fraction thereof, would be paid in excess of rates already mentioned. There was some discussion on who was going to police and measure such lengthy hauls, but this was vaguely answered.

Brooklyn and Long Island City shippers also were much concerned as to what would happen to them under the plan, as were Jersey shippers. Traffic Manager Welsh, of the Brooklyn Chamber of Commerce, wanted to know what assurance the carriers could give that the new delivery system would not eliminate existing delivery systems upon which Brooklyn was now dependent. Mr. Lawrence said he could not answer that question without further study of the situation, but one or two other railroad men present said that facilities of such companies as the New York Dock Railways, Bush Terminal, etc., would continue to be used.

Jersey shippers, asking how the New York Central would handle shipments to Jersey, were told that road would probably handle them through the West Shore Railroad. Throughout all the discussion, Mr. Lawrence constantly reiterated that many of the details of the plan remain to be worked out and that preliminary rate schedules must be considered as "experimental in nature."

## Oil Acts As Sentinel to Warn of Engine Wear

CONTINUED FROM PAGE 29

oline, and is then run through a filter with chemically treated pads which remove all sludge, carbon and foreign matter. The machine operates automatically by means of electricity. About 80 per cent of the used oil is reclaimed at a total cost of about 8 cents per gal.

The equipment is very compact, and hence takes up very little room in the repair shop. This particular installation was placed on a platform built above the air compressor, so that no additional floor space was required. The reclaimed oil is piped directly to service barrels, so that it is never handled by hand after being poured into the reclaimer.

The initial investment was \$750, which was paid for in a year by oil saved.

"We did not adopt the reclamation process blindly on faith," reports Mr. Peters. "Reclaimed oil was thoroughly tested by us for several weeks before we definitely obligated ourselves for the equipment. We made diverse and sundry tests, chemical and otherwise. We found that viscosity, fire flash and body of reclaimed oil was as good as new oil. The fact that reclaimed oil is off color means very little so far as its lubrication qualities are concerned.

"One interesting test was driving a Chevrolet sedan fifteen miles with all reclaimed oil removed from the crankcase. But the oil was so adhesive the film remaining on the working parts was sufficient to lubricate the engine for a 15 mile run. As a matter of fact, the engine didn't get extremely hot at the end of the run.

"Not long ago we overhauled a Ford that had run 18,000 miles, using only reclaimed oil. We found that the cylinder walls were worn only one-thousandths of an inch, a remarkable evidence of the lubricating qualities of reclaimed oil.

"Mileage readings are taken every day and noted on a daily report sheet, with all the trucks listed in the left-hand column by number. In the next column is listed the next grease mileage (every 650 miles), then the speedometer reading, then the next oil change mileage (varying from 500 miles to 3000 depending on the engine, and the recommendation of the chemist). This sheet also includes a report of new oil added, gas used, wash, grease used, tires and battery condition, repairs needed.

The next grease and oil mileage is carried forward every day on this report, and when these mileages coincide with the speedometer reading for the day, the particular truck or trucks are checked for this service. Hence there can be no slip-up on oil change or greasing at the regular allotted mileage interval. This is a simple record for a small fleet but very effective.

# SHULER

## TRAILER AXLES

### The Choice of Most Trailer Manufacturers

The fact that Shuler Trailer Axles are the choice of the majority of Trailer manufacturers, for standard equipment, is significant.

It indicates, better than almost any other recommendation, that Shuler Trailer Axles are dependable.

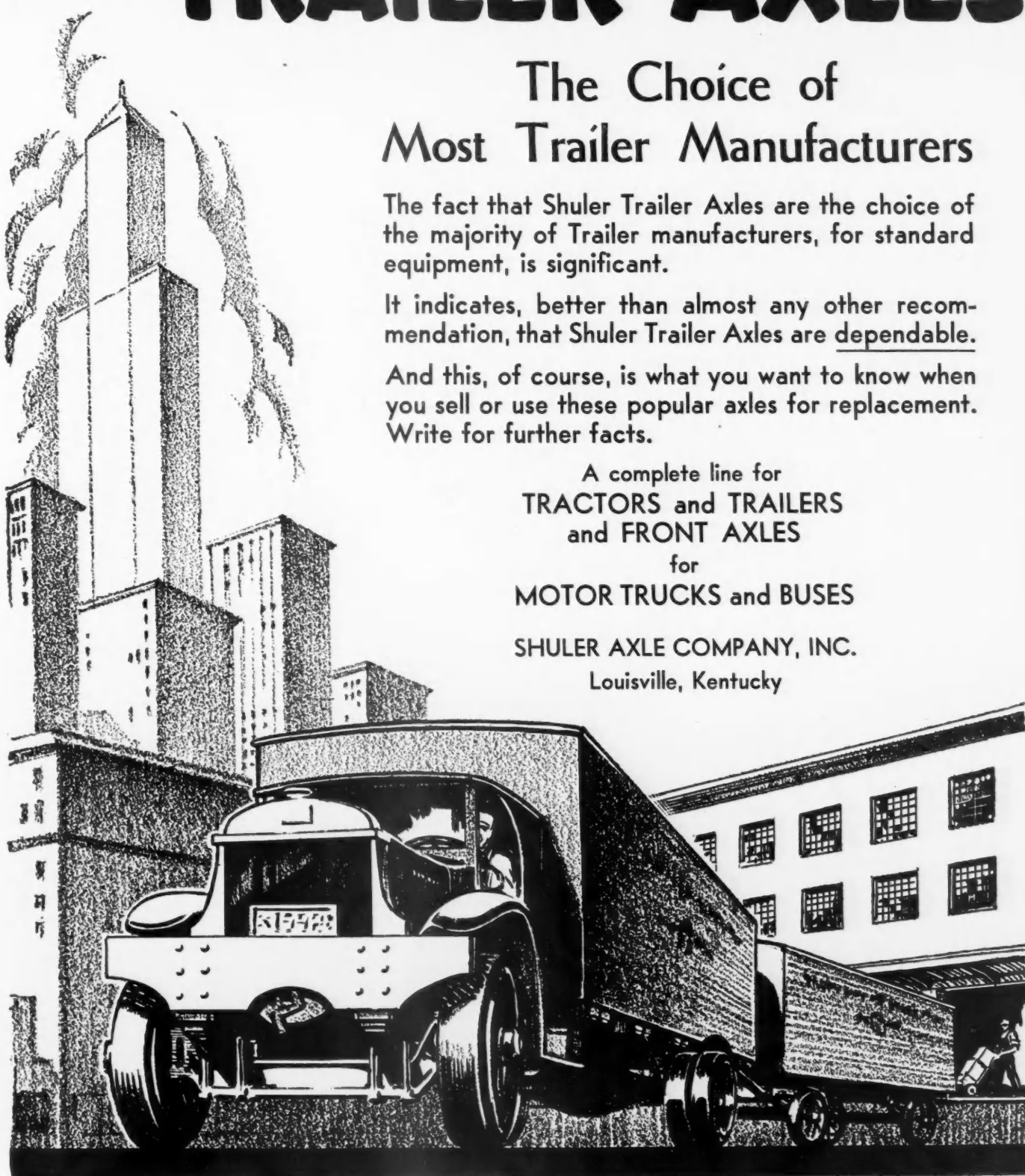
And this, of course, is what you want to know when you sell or use these popular axles for replacement. Write for further facts.

A complete line for  
TRACTORS and TRAILERS  
and FRONT AXLES  
for

MOTOR TRUCKS and BUSES

SHULER AXLE COMPANY, INC.

Louisville, Kentucky





# COMMERCIAL CAR JOURNAL'S

CORRECTIONS ARE MADE EACH MONTH FROM DATA SUPPLIED DIRECT BY TRUCK MAKERS +

Line Number	MAKE AND MODEL	GENERAL (See Keynote)				TIRE SIZE		MAJOR UNITS										FRAME		
		Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	ENGINE		TRANSMISSION		REAR AXLE				Side Rail Dimensions	Type	
										Make and Model	No. of Cylinders Bore and Stroke	Make and Model	Location and Forward Speeds	Aux. Location and Speeds	Make and Model	Gear and Type	GEAR RATIOS			
																	In High			In Low
1	A.C.F. 160	6	6950	186	222	26000	10170	B9.75/22	B9.75/22	Has 160	6-4 1/2 x 5 1/2	BL 1714	U 4 Op	Tim 76730	2F	R 7.46 52.7	8x3	P		
2	A.C.F. 175B	6 1/2	8300	186	222	26000	10750	B10.50/22	B10.50/22	Has 175	6-5x6	BL 714	U 4 Op	Tim 76730	2F	R 7.46 52.7	8x3	P		
3	Am. LaF. Big Ch. 16	7 1/2	8800	186	240	30000	11610	B10.50/24	B10.50/24	Has 175	6-5x6	BL 714	U 4 Op	Tim 76730	2F	R 7.46 52.7	8x3	P		
4	Armleder 11Ha	2-3	6725	226	243	24000	10000	P40x8	DP40x8	Ow 16R	6-4 1/2 x 6	Ow 16R	A 4 No	Ow 16R	2F	R 6.13 33.0	9 1/2 x 3 1/2	P		
5	Armleder 21Ha	2 1/2-4	1570	156	195	11500	4070	B7.00/20	DB7.00/20	Con 16C	6-3 1/2 x 4 1/2	Fu WOBB	U 4 No	Tim 53200H	BF	H 5.83 31.2	6x3 1/2	P		
6	Armleder 31Ha	3 1/2-5	2185	160	207	15300	4783	B8.25/20	DB8.25/20	Her WXB	6-3 1/2 x 4 1/2	Fu MLU	U 4 No	Tim 54200H	BF	H 6.06 38.5	6x3 1/2	P		
7	Armleder 41Ha	4 1/2-5 1/2	2745	146	213	19500	5838	B9.00/20	DB9.00/20	Her WXC	6-4x4 1/2	Fu MGU	U 4 No	Tim 56200H	BF	R 6.02 39.2	7x3 1/2	P		
8	Armleder 51Ha	5-7	3050	160	227	23000	6660	B9.75/20	DB9.75/20	Her WXC	6-4x4 1/2	Fu MGU	U 4 No	Tim 58200H	BF	R 6.83 43.8	7x3 1/2	P		
9	Armleder 61Ha	6-7	3625	146	227	24000	7400	B9.75/20	DB9.75/20	Her WXC2	6-4 1/2 x 4 1/2	Fu MGU	U 4 No	Tim 65706H	WF	R 8.5 55.2	8 1/2 x 3 1/2	P		
10	Armleder 71Ha	7-9	4595	164	235	29500	7800	B10.50/20	DB10.50/20	Her WXC	6-4 1/2 x 4 1/2	Fu VUOG	U 5 No	Tim 65704H	WF	R 7.8 55.1	7x3 1/2	P		
11	Armleder 81Ha	8-9	5645	148	174	35000	6250	B9.75/20	DB9.75/20	Her WXC3	6-4 1/2 x 4 1/2	Fu VUOG	U 5 No	Tim 58200H	BF	R 7.8 55.1	7x3 1/2	P		
12	Armleder 91Ha	9-10	6895	148	174	39000	6450	B9.75/20	DB9.75/20	Her WXC3	6-4 1/2 x 4 1/2	Fu VUOG	U 5 No	Tim 58200H	BF	R 7.8 55.1	7x3 1/2	P		
13	Atterbury 10	10	3895	148	174	39000	6450	B9.75/20	DB9.75/20	Her WXC3	6-4 1/2 x 4 1/2	Fu VUOG	U 5 No	Tim 58200H	BF	R 7.8 55.1	7x3 1/2	P		
14	Atterbury 11	11	1095	132	145	7000	3400	P30x5	P30x5	Lyc WTG	6-3x4 1/2	Wa T9	U 4 No	Tim 51000H	B	H 6.20 39.7	5 1/2 x 3 1/2	N		
15	Atterbury 12	12	1595	145	160	8000	3640	P32x6	P32x6	Lyc WTG	6-3x4 1/2	Wa T9	U 4 No	Tim 52200H	B	H 6.50 39.7	5 1/2 x 3 1/2	N		
16	Atterbury 13	13	1985	160	160	10000	3955	P32x6	DP32x6	Lyc ASD	6-3 1/2 x 4 1/2	Co F4B	U 4 No	Tim 54200H	B	H 6.80 45.1	5 1/2 x 3 1/2	N		
17	Atterbury 14	14	2375	175	188	12000	5300	B7.50/20	DB7.50/20	Lyc ASD	6-3 1/2 x 4 1/2	Co W4C	U 4 No	Tim 54200H	B	H 6.80 39.8	7x3 1/2	N		
18	Atterbury 15	15	2950	189	202	14000	5800	B8.25/20	DB8.25/20	Lyc ASD	6-3 1/2 x 4 1/2	Co W4C	U 4 No	Tim 56200H	B	H 7.40 43.3	7x3 1/2	N		
19	Atterbury 16	16	3700	173	199	16040	7250	P34x7	DP34x7	Con 18R	6-4x4 1/2	BL 35-4	U 4 No	Tim 65001H	WF	R 7.1 37.4	7x3 1/2	N		
20	Atterbury 17	17	3150	190	215	16000	6000	B9.00/20	DB9.00/20	Lyc ASD	6-3 1/2 x 4 1/2	Co W4C	U 4 No	Tim 58200H	B	H 7.80 45.6	7x3 1/2	N		
21	Atterbury 18	18	4050	209	221	18500	7800	B9.00/20	DB9.00/20	Con 18R	6-4x4 1/2	BL 51-5	U 4 No	Tim 65200H	W	R 7.50 40.1	8x3 1/2	N		
22	Atterbury 19	19	4650	222	222	23000	8400	B9.75/20	DB9.75/20	Con 20R	6-4 1/2 x 4 1/2	BL 51-5	U 5 No	Tim 65720H	W	R 8.50 62.9	8x3 1/2	N		
23	Atterbury 20	20	4750	186	220	19315	8300	B36x8	DP36x8	Con 20R	6-4 1/2 x 4 1/2	BL 51-5	U 4 No	Tim 65706H	WF	R 7.25 38.8	8x3 1/2	N		
24	Autocar 1	1	5675	223	237	28000	9100	B10.50/20	DB10.50/20	Con 21R	6-4 1/2 x 4 1/2	BL 55-7	U 7 No	Tim 66720DH	W	R 9.0 85.5	9x3 1/2	N		
25	Autocar 2	2	3200	150	192	11000	5800	B7.50/20	DB7.50/20	Ow 18	6-3 1/2 x 4 1/2	BL 234	U 4 No	Ow 18	2F	H 5.22 33.4	6 1/2 x 3 1/2	T		
26	Autocar 3	3	3500	150	192	11000	5800	B8.25/20	DB8.25/20	Ow 18	6-4x4 1/2	Ow 18	U 4 No	Ow 18	2F	H 5.22 33.4	6 1/2 x 3 1/2	T		
27	Autocar 4	4	4600	114	161	11000	7900	B9.75/24	DB9.75/24	Ow 18	6-4 1/2 x 5 1/2	Ow 18	U 4 No	Ow 18	2F	H 8.46 53.6	7x2 1/2	T		
28	Autocar 5	5	4800	114	161	11000	7900	B9.75/24	DB9.75/24	Ow 18	6-4 1/2 x 5 1/2	Ow 18	U 4 No	Ow 18	2F	H 8.46 53.6	7x2 1/2	T		
29	Autocar 6	6	4600	165	227	11000	7990	B9.75/20	DB9.75/20	Ow 18	6-4 1/2 x 4 1/2	Ow 18	U 4 No	Ow 18	2F	H 7.12 45.1	8x3 1/2	T		
30	Autocar 7	7	5100	168	227	11000	7990	B9.75/20	DB9.75/20	Ow 18	6-4 1/2 x 4 1/2	Ow 18	U 4 No	Ow 18	2F	H 7.12 45.1	8x3 1/2	T		
31	Autocar 8	8	6100	192	242	11000	9300	B10.50/20	DB10.50/20	Ow 18	6-4 1/2 x 4 1/2	Ow 18	U 4 No	Ow 18	2F	H 7.20 88.3	9x3 1/2	T		
32	Autocar 9	9	7000	210	242	11000	10900	B10.50/20	DB10.50/20	Ow 18	6-4 1/2 x 4 1/2	Ow 18	U 4 No	Ow 18	2F	H 7.20 88.3	9x3 1/2	T		
33	Autocar 10	10	7000	183	234	11000	10900	B10.50/24	DB10.50/24	Ow 18	6-4 1/2 x 4 1/2	Ow 18	U 4 No	Ow 18	2F	H 8.90 109.1	10 1/2 x 3 1/2	T		
34	Available 11	11	11000	180	234	11000	12300	B10.50/24	DB10.50/24	Ste LT51128	6-5 1/2 x 6	BL 734	U 4 A 3	Wls 79731	2F	H 8.90 109.1	10 1/2 x 3 1/2	T		
35	Available 12	12	1495	Op	Op	11000	4000	B6.50/20	DB6.50/20	Wau ZK	6-3 1/2 x 4 1/2	W-GT9	U 4 No	Tim 53200H	BF	H 6.6 42.2	6x2 1/2	T		
36	Available 13	13	1975	Op	Op	13500	5000	B7.00/20	DB7.00/20	Wau TL	6-3 1/2 x 4 1/2	BL 224	U 4 No	Tim 54300H	BF	R 6.8 43.5	6x2 1/2	T		
37	Available 14	14	2195	Op	Op	16000	5800	B7.50/20	DB7.50/20	Wau MS	6-3 1/2 x 4 1/2	BL 314	U 4 No	Tim 56200H	BF	R 7.4 48.8	6x2 1/2	T		
38	Available 15	15	2650	Op	Op	17000	6000	B8.25/20	DB8.25/20	Wau MS	6-3 1/2 x 4 1/2	BL 314	U 4 No	Tim 56200H	BF	R 7.4 48.8	6x2 1/2	T		
39	Available 16	16	2985	Op	Op	20500	6500	B8.25/20	DB8.25/20	Wau ML	6-4x4 1/2	BL 51	U 4 No	Tim 58200H	BF	R 7.8 41.1	7x2 1/2	P		
40	Available 17	17	3425	Op	Op	20500	7400	B9.00/20	DB9.00/20	Wau ML	6-4 1/2 x 4 1/2	BL 554	U 4 No	Tim 58200H	BF	R 7.8 54.5	7x2 1/2	P		
41	Available 18	18	3650	Op	Op	25500	8000	B9.75/20	DB9.75/20	Wau SRL	6-4 1/2 x 5 1/2	BL 615	U 5 No	Tim 65720H	WF	R 8.5 55.6	7x2 1/2	P		
42	Available 19	19	3850	Op	Op	25500	8150	B9.75/20	DB9.75/20	Wau SRL	6-4 1/2 x 5 1/2	BL 60	A 7 No	Tim 65720H	WF	R 8.5 55.6	7x2 1/2	P		
43	Available 20	20	4985	Op	Op	27000	8800	B9.75/20	DB9.75/20	Wau 6AB	6-4 1/2 x 5 1/2	BL 70-7	A 7 No	Tim 65720H	WF	R 8.5 55.6	7x2 1/2	P		
44	Available 21	21	5350	Op	Op	33000	9800	B9.75/20	DB9.75/20	Wau 6RB	6-5x5 1/2	BL 714-703	A 4 A 3	Tim 66720H	WF	R 9.5 90.0	7x2 1/2	P		
45	Brockway 1	1	1215	149	168	9500	4075	B6.00/20	DB6.00/20	Con 26B	6-3 1/2 x 4 1/2	Wa T9	U 4 No	Tim 53200H	BF	H 5.66 36.2	5 1/2 x 3 1/2	T		
46	Brockway 2	2	1525	149	168	11500	4355	B6.50/20	DB6.50/20	Con 27B	6-3 1/2 x 4 1/2	Wa T9	U 4 No	Tim 54200H	BF	H 5.83 37.4	5 1/2 x 3 1/2	T		
47	Brockway 3	3	1990	149	168	12500	4450	P32x6	DP32x6	Con 28B	6-3 1/2 x 4 1/2	Wa T9	U 4 No	Tim 54200H	BF	H 5.83 37.4	5 1/2 x 3 1/2	T		
48	Brockway 4	4	2495	156	200	17500	6100	P32x6	DP32x6	Con 30B	6-4x4 1/2	BL 314	U 4 No	Tim 54300H	BF	H 5.85 38.5	5 1/2 x 3 1/2	T		
49	Brockway 5	5	2935	170	212	19500	6500	P32x6	DP32x6	Con 30B	6-4x4 1/2	BL 314	U 4 No	Tim 54300H	BF	H 5.85 38.5	5 1/2 x 3 1/2	T		
50	Brockway 6	6	3160	170	212	19500	7100	P32x6	DP32x6	Con 33B	6-4 1/2 x 4 1/2	BL 554	U 4 No	Tim 69317L	2F	R 6.41 46.2	8x3 1/2	T		
51	Brockway 7	7	3660	170	224	19500	7200	P34x7	DP34x7	Con 34B	6-4 1/2 x 4 1/2	Fu VUOG	U 5 No	Tim 69317L	2F	R 6.416				



Line Number	ENGINE DETAILS										FUEL SYST.	ELEC-TRICAL	FRONT AXLE		BRAKES		BODY MOUNT-ING DATA		SPRINGS											
													Make and Model	Universal Make	Steering Gear Make	SERVICE		Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear								
	Piston Displacement	Compression Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Arrangement	Camshaft Drive	Piston Material	Main Bearings	Length	Oiling System Type	Governor Make	Carburetors Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Clutch Type and Make	Radiator Make	Universal Make	Make and Model	Steering Gear Make	Lining Area	Drum Material	Hand Type, Location	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	
1468	4.4	322	43.3	120-2200	H	C	A	7-2 1/2	10%	CC	Ha	Zen	V	DR	DR	P.B.L	Lo	Spi	Tim	27451	Ros	O41A	720	A	CD	172	102	33 1/2	42x3	56x4
2707	4.4	300	60.	175-2200	H	L	A	7-3 1/2	14%	CC	Ha	Zen	M	DR	DR	dP.L	Lo	Spi	Tim	27451	Ros	O41A	816	A	ED	172	102	33 1/2	42x3	56x4
707	4.4	500	60.	175-2200	H	L	A	7-3 1/2	14%	CC	Ha	Zen	M	DR	DR	dP.L	Lo	Spi	Tim	27451	Ros	O41A	816	A	ED	172	102	33 1/2	42x3	56x4
4572	4.5	360	48.6	115-1600	L	L	G	C 4-3	10%	FP	No	Zen	V	DR	DR	P.B.L	Ow	Spi	Tim	160R	Ow	O41H	138	P	TX	Opt	Opt	33	44x3	56x3
248	5.0	150	27.3	65-2600	L	L	L	C 7-2 1/2	10%	FP	No	Zen	M	DR	DR	P.B.B	Yo	Spi	Tim	30000H	Ros	O41H	380	G	TX	129 1/2	Opt	31 1/2	40x2 1/2	50x3
298	4.7	192	33.7	66-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.B.B	Yo	Spi	Tim	12703H	Ros	L41HV	452	G	TX	129 1/2	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	40x2 1/2	50x3
339	4.7	225	38.4	73-2200	L	L	L	C 7-2 1/2	13%	PC	Mo	Zen	M	AL	AL	D.Fu	Yo	Spi	Tim	33020H	Ros	L41HV	578	G	TX	106	Opt	31 1/2	4	

Line Number	MAKE AND MODEL	GENERAL (See Keynote)					TIRE SIZE		MAJOR UNITS.										FRAME	
		Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	ENGINE		TRANSMISSION		REAR AXLE				Gear Ratios	Side Rail Dimensions	Type
										Make and Model	No. of Cylinders Bore and Stroke	Make and Model	Location and Forward Speeds	Make and Model	Gear and Type	Drive and Torque	In High			
1	Diamond T. 504A	3	2650	166	208	17500	6420	B8.25/20	DB8.25/20	Her WXC	6-4x4 1/2	Co RU54C	U4	No	Wis 69317 BL	2F	R Opt	Opt	6 1/2 x 3 1/4	C
2	(conc'd.) (N) 506A	3	2950	174	240	17500	6600	B8.25/20	DB8.25/20	Her WXC3	6-4x4 1/2	Co RU5C	U5	Op	Wis 69317 BL	2F	H Opt	Opt	6 1/2 x 3 1/4	C
3	603	3	3395	169	230	20000	7540	B9.00/20	DB9.00/20	Her YXC	6-4x4 1/2	Co RU5C	U5	Op	Wis 1237H	2F	H Opt	Opt	6 1/2 x 3 1/4	C
4	(N) 606B	3	3695	179	246	20000	7600	B9.00/20	DB9.00/20	Her RXB	6-4x4 1/2	Co RU5C	U5	Op	Wis 1237H	2F	H Opt	Opt	6 1/2 x 3 1/4	C
5	510	4	1995	158	186	18000	6000	B7.00/20	DB8.25/20	Her WXC	6-4x4 1/2	Co RU54C	U4	No	Tim 58205H	2F	H Opt	Opt	6 1/2 x 3 1/4	C
6	Differential. E-122	4	4925	178	238	24000	9300	B9.75/22	DB9.75/22	Her ASD	6-4x4 1/2	Co SA5	A5	Op	Wis 1627 KW	2F	R Opt	Opt	7 1/2 x 3 1/4	C
7	Dodge Bros. F-10	4	3200	160	181	18100	5100	P34x7	DP34x7	Lyc ASD	6-3x4 1/2	BL 314	U4	No	Tim 56000H	2F	R Opt	Opt	6 1/2 x 3 1/4	C
8	F-10	4	375	109	109	4025	1925	B5.00/19	B5.00/19	Own	6-3x4 1/2	Own	U3	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
9	F-10	4	445	109	109	4125	1975	B5.25/19	B5.25/19	Own	6-3x4 1/2	Own	U3	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
10	UG-20	4	490	124	124	4760	2260	B6.00/20	B6.00/20	Own	6-3x4 1/2	Own	U3	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
11	G-20	4	595	124	124	4860	2360	B6.00/20	B6.00/20	Own	6-3x4 1/2	Own	U3	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
12	G-20	4	537	131	157	5900	2450	B7.50/17	B7.50/17	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
13	G-20	4	597	131	157	5975	2520	B7.50/17	B7.50/17	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
14	UG-30	4	495	133	133	5840	2590	P6.00/20	P32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
15	UG-30	4	595	133	133	5940	2690	P6.00/20	P32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
16	UG-30	4	525	131	157	8200	2490	B6.00/20	P32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
17	G-30	4	585	131	157	8275	2560	B6.00/20	P32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
18	G-30	4	795	136	165	10500	3345	B7.00/20	DB7.00/20	Own	6-3x4 1/2	Own	U5	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
19	UG-30	4	595	136	165	8225	2581	B6.00/20	P32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
20	UG-30	4	695	136	165	8275	2631	B6.00/20	P32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
21	UG-30	4	1425	140	165	10175	3780	B6.00/20	DB6.00/20	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
22	F-40	4	1995	150	190	14590	5173	B6.50/20	DB6.50/20	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
23	F-40	4	1515	135	185	12250	4235	P32x6	DP32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
24	(5) F-61	4	2575	170	195	19429	5789	P32x6	DP32x6	Own	6-3x4 1/2	Own	U4	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
25	(5) G-81	4	5285	170	220	25000	7840	B9.75/20	DB9.75/20	Own	6-3x4 1/2	Own	U5	No	Own	2F	R Opt	Opt	6 1/2 x 3 1/4	C
26	Douglas. A-6	4	1095	135	145	7500	3075	P30x5	P32x6	Bud J214	6-3x4 1/2	WG T9	U4	No	Cla B370	2F	R Opt	Opt	6 1/2 x 3 1/4	C
27	Douglas. A-6	4	2050	150	Op	9000	3950	P30x5	P32x6	Bud WTU	6-3x4 1/2	Fu MKU12	U4	No	Wis 4627	2F	R Opt	Opt	6 1/2 x 3 1/4	C
28	B-6	4	2150	150	Op	10500	4100	P30x5	P32x6	Bud HS6	6-3x4 1/2	Fu MKU12	U4	No	Wis 4627	2F	R Opt	Opt	6 1/2 x 3 1/4	C
29	C-4	4	3275	156	Op	12500	5100	P32x6	P34x7	Bud KBU-I	6-4x4 1/2	Fu MGU14	U4	Op	Wis 6617	2F	R Opt	Opt	6 1/2 x 3 1/4	C
30	C-6	4	3425	168	Op	15500	5850	P32x6	P34x7	Bud DW6	6-3x4 1/2	Fu MGU14	U4	Op	Wis 6617	2F	R Opt	Opt	6 1/2 x 3 1/4	C
31	CD-4	4	3855	190	Op	17500	5860	P34x7	P36x8	Bud EBU-I	6-4x4 1/2	Fu MGU14	U4	Op	Wis 8817	2F	R Opt	Opt	6 1/2 x 3 1/4	C
32	CD-6	4	3955	190	Op	17500	5800	P34x7	P36x8	Bud HS6	6-3x4 1/2	Fu MGU14	U4	Op	Wis 8817	2F	R Opt	Opt	6 1/2 x 3 1/4	C
33	D-6	4	4010	186	Op	20000	6500	P36x5	S36x10	Bud YBU-I	6-4x4 1/2	Fu RU16	U4	Op	Wis 892A	2F	R Opt	Opt	6 1/2 x 3 1/4	C
34	D-6	4	4430	186	Op	20000	6800	P36x5	S36x10	Bud BUS	6-4x4 1/2	Fu RU16	U4	Op	Wis 892A	2F	R Opt	Opt	6 1/2 x 3 1/4	C
35	D-6 5p.	4	5500	216	Op	22000	7560	P38x7	DP40x8	Bud K428	6-4x4 1/2	Fu HQC	U4	Op	Wis 1418	2F	R Opt	Opt	6 1/2 x 3 1/4	C
36	F-4	4	5500	185	Op	26000	9200	P36x6	S40x12	Bud BBU	6-4x4 1/2	Fu HU18	U4	Op	Wis 1458	2F	R Opt	Opt	6 1/2 x 3 1/4	C
37	F-6	4	6300	196	Op	26000	9200	B9.75/20	DB9.75/20	Bud GL6	6-4x4 1/2	Fu HU18	U4	Op	Wis 1567	2F	R Opt	Opt	6 1/2 x 3 1/4	C
38	Duplex. GF	4	2800	143	...	10500	4700	P32x6	P34x7	Bud WTU	6-3x4 1/2	BL 31	U3	No	Tim 64600	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
39	GS	4	2950	143	...	10500	4800	P32x6	P34x7	Bud HS6	6-3x4 1/2	BL 31	U3	No	Tim 64600	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
40	GS	4	3600	160	...	15000	5600	P32x6	P36x8	Bud DW6	6-3x4 1/2	BL 324	U4	No	Tim 65001	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
41	FAC	4	4250	166	...	16500	7200	P34x5	S36x8	Bud EBU-I	6-4x4 1/2	BL 51	U5	No	Tim 65706	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
42	EF	4	4250	130	...	17000	6500	P36x8	S36x8	Bud EBU-I	6-4x4 1/2	BL 51	U5	No	Tim 65706	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
43	SAC	4	4750	166	...	18000	7400	P34x5	S36x8	Bud K428	6-4x4 1/2	BL 55	A7	No	Tim 65706	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
44	K	4	5200	172	...	20000	8000	B10.50/20	DB10.50/20	Bud L525	6-4x4 1/2	BL 60	A7	No	Own 76725	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
45	M	4	7600	Op	...	28000	10000	P34x7	DP36x7	Bud GL6	6-4x4 1/2	BL 70	A7	No	Tim 68700	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
46	Fageol. 101	4	900	130	167	8000	3700	B7.00/20	BT.00/20	Wau XAK	6-3x4 1/2	WG T9	U4	No	Tim 53600H	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
47	Fageol. 106	4	1400	161	173	8500	3975	B7.00/20	BT.00/20	Wau TS	6-3x4 1/2	WG T9	U4	No	Tim 53200H	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
48	Fageol. 135	4	1900	161	177	10500	5150	P30x5	DP30x5	Wau TL	6-3x4 1/2	WG T9	U4	No	Tim 54200H	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
49	Fageol. 250	4	2750	178	196	14000	3750	P34x7	DP34x7	Wau MK	6-4x4 1/2	BL 314	U4	No	Tim 58200H	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
50	Fageol. 300	4	3250	178	196	16000	6500	B9.00/20	DB9.00/20	Wau MK	6-4x4 1/2	BL 314	U4	No	Tim 58200H	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
51	Fageol. 370	4	4035	182	200	22000	8080	B9.00/20	DB9.00/20	Wau SRK	6-4x4 1/2	BL 554&60	A4	A3	Tim 65706	W1/2	R Opt	Opt	6 1/2 x 3 1/4	C
52	Federal. D3	4	670	130	166	10000	3225	B6.00/20	P32x6	Con W10	6-3x4 1/2	WG T9	U4	No	Cla B374	2F	R Opt	Opt	6 1/2 x 3 1/4</	



Line Number	ENGINE DETAILS										FUEL SYST.	ELEC. TRICAL	FRONT AXLE	BRAKES		BODY MOUNT-ING DATA		SPRINGS		Auxiliary Type												
	Piston Displacement	Compression Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Arrangement	Camshaft Drive	Piston Material	MAIN BEARINGS					Governor Make	Carburetors Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Clutch Type and Make		Radiator Make	Universal Make	Steering Gear Make	Make, Location Type, Operation	Lining Area	Drum Material	Hand Type, Location	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear
									Number and Diameter	Length																						
1339	4.4	212	38.4	76-2400	L	G	C	7-2	13	PC	Ha	Zen	M	AL	LN	D.Co	GO	Spl	Shu 5582B	Ros	L41HV	408	pa	TD	126	80 1/2	34	45 1/2 x 2 1/2	56x3			
3284	4.4	262	43.9	90-2200	L	G	C	7-3	14	PC	Ha	Zen	M	AL	LN	D.Co	GO	Spl	Shu 5582B	Ros	L41HV	408	pa	TD	138	87 3/4	34	45 1/2 x 2 1/2	56x3			
3424	4.4	280	45.9	93-2200	L	G	C	7-3	14	PC	Ha	Zen	M	AL	LN	D.Co	GO	Spl	Shu 5582B	Ros	L41HV	408	pa	TD	120	79 1/4	34	45 1/2 x 2 1/2	56x3			
4501	4.4	330	48.4	111-2200	L	G	C	7-3	12	PC	Ha	Zen	M	AL	LN	D.Co	GO	Spl	Shu 5582B	Ros	L41HV	408	pa	TD	138	88	34	45 1/2 x 2 1/2	56x3			
5339	4.4	412	58.4	76-2400	L	G	C	7-3	12	PC	Ha	Zen	M	AL	LN	D.Co	GO	Spl	Shu 5582B	Ros	L41HV	408	pa	TD	114	71 3/4	34	45 1/2 x 2 1/2	56x3 1/2			
6229	4.4	450	61.9	85-2800	L	G	C	7-3	9	PC	Mo	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	W41A	552	pa	FD	120	77 3/4	34	42 1/2 x 2 1/2	56x3 1/2		
7299	4.4	198	33.7	85-2800	L	G	C	7-3	9	PC	Mo	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	W41A	552	pa	FD	120	77 3/4	34	42 1/2 x 2 1/2	56x3 1/2		
8196	4.4	124	21.0	48-2800	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
9211	4.4	134	25.3	60-3100	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
10196	4.4	124	21.0	48-2800	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
11208	5.1	132	27.3	63-3200	L	G	C	7-2	10	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
12196	4.4	124	21.0	48-2800	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
13211	4.4	134	25.3	60-3100	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
14196	4.4	124	21.0	48-2800	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
15208	5.1	132	27.3	63-3200	L	G	C	7-2	10	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
16196	4.4	124	21.0	48-2800	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
17211	5.1	134	25.3	60-3100	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
18217	5.1	144	25.3	75-3200	L	G	C	7-2	10	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
19267	5.1	154	25.3	76-2400	L	G	C	7-2	10	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
20211	5.1	134	25.3	60-3100	L	G	C	7-3	6	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
21208	5.1	132	27.3	63-3200	L	G	C	7-2	10	CC	No	Car	M	DR	DR	P.BB	Fe	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
22309	4.7	200	31.5	96-3000	L	G	C	7-2	11	CC	Ha	Ste	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
23349	4.7	167	39.2	78-3000	L	G	C	7-2	11	CC	KP	Ste	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
24309	4.7	200	31.5	96-3000	L	G	C	7-2	11	CC	Ha	Ste	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
25349	4.7	200	31.5	96-3000	L	G	C	7-2	11	CC	Ha	Ste	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own		
26216	4.7	136	22.3	36-1800	L	G	C	7-3	10	PC	No	Str	V	AL	AL	D.BL	Mo	Cle	Shu 510	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3			
27244	4.7	136	22.3	36-1800	L	G	C	7-3	10	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 510	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
28241	4.7	136	22.3	36-1800	L	G	C	7-3	10	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 510	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
29263	4.7	156	25.6	43-2000	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 510	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
30331	4.7	156	25.6	43-2000	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 510	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
31324	4.7	174	28.9	49-1900	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
32333	4.7	174	28.9	49-1900	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
33381	4.7	174	28.9	49-1900	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
34386	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
35411	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
36410	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
37472	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
38472	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
39430	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
40312	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
41312	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
42312	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
43212	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
44212	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
45212	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
46210	4.7	230	38.4	78-2400	L	G	C	7-2	9	PC	Bu	Zen	ELN	LN	D.Fu	OW	Blo	Shu 5550	Ros	W21M	538	a	TX	96	58	34	39 1/2 x 2 1/2	54x3				
47219	5.1	170	27.3	68-2500	L	G	A	7-2	7	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
48255	5.1	170	27.3	68-2500	L	G	A	7-2	7	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
49381	4.4	240	40.8	82-2200	L	G	A	7-2	12	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
50381	4.4	240	40.8	82-2200	L	G	A	7-2	12	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
51312	4.4	240	40.8	82-2200	L	G	A	7-2	12	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
52300	4.4	240	40.8	82-2200	L	G	A	7-2	12	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
53215	4.4	240	40.8	82-2200	L	G	A	7-2	12	PC	No	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
54248	5.1	150	27.3	64-2600	L	C	A	7-2	10	CC	KP	Zen	M	DR	DR	P.BB	Lo	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own			
55248	5.1	150	27.3	64-2600	L	C																										



Line Number	MAKE AND MODEL	GENERAL (See Keynote)				TIRE SIZE				MAJOR UNITS										FRAME			
		Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	ENGINE		TRANSMISSION		REAR AXLE				Gear and Type	Drive and Torque	GEAR RATIOS		Side Rail Dimensions	Type
										Make and Model	No. of Cylinders Bore and Stroke	Make and Model	Location and Forward Speeds	Make and Model	Location and Forward Speeds	In High	In Low						
1	Gramm...BKF (concluded)	1 1/2-2	1495	131	210	10000	4000	B6.00/20	DB6.00/20	Lyc ASD	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 53200	BF	H	5.6	37	6x2 1/2 x 1 1/2	L		
2	Gramm...B2	1 1/2-2	1295	140	196	12000	4150	B6.50/20	DB6.50/20	Lyc ASD	6-3 1/2 x 4 1/2	Co A4J	U4	No	Tim 54200H	BF	H	5.83	37.1	6x2 1/2 x 1 1/2	L		
3	Gramm...BF	2-3	1695	140	210	12000	4300	B6.50/20	DB6.50/20	Lyc ASD	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 54200	BF	H	5.8	37.0	10x2 1/2 x 1 1/2	L		
4	Gramm...CX4	2-3	1095	131	210	12000	3950	B6.50/20	DB6.50/20	Con W20	4-4 1/2 x 4 1/2	WG T9	U4	No	Tim 54200H	BF	H	5.8	37.0	10x2 1/2 x 1 1/2	L		
5	Gramm...CX6	2-3	1295	131	210	12000	4150	B6.50/20	DB6.50/20	Con 16C	6-3 1/2 x 4 1/2	WG T9	U4	No	Tim 54200H	BF	H	5.8	37.0	10x2 1/2 x 1 1/2	L		
6	Gramm...C	2-3 1/2	1795	160	224	14000	4820	B7.00/20	DB7.00/20	Lyc ASD	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 54200H	BF	H	5.8	37.1	7x2 1/2 x 1 1/2	L		
7	Gramm...CF	2-3 1/2	1895	160	224	14000	4900	B7.50/20	DB7.50/20	Lyc ASD	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 54200	BF	H	5.8	37.1	7x2 1/2 x 1 1/2	L		
8	Gramm...CXF	2-3 1/2	2395	160	224	14000	5100	B7.50/20	DB7.50/20	Con 20R	6-4 1/2 x 4 1/2	BL 554	U4	No	Tim 54200	BF	H	5.8	41.6	7x2 1/2 x 1 1/2	L		
9	Gramm...D	2 1/2-4	1995	160	224	17000	5100	B7.50/20	DB7.50/20	Lyc ASD	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 56200H	BF	H	6.1	39.0	7x2 1/2 x 1 1/2	L		
10	Gramm...DF	2 1/2-4	2695	160	260	17000	5300	B7.50/20	DB7.50/20	Con 21R	6-4 1/2 x 4 1/2	BL 554	U4	No	Tim 56200	BF	H	6.1	43.5	7x2 1/2 x 1 1/2	L		
11	Gramm...E330	3-4 1/2	2595	160	224	20000	5950	B8.25/20	DB8.25/20	Lyc TS	6-3 1/2 x 5	BL 554	U4	No	Tim 58200H	BF	H	5.5	35.6	12x2 1/2 x 1 1/2	L		
12	Gramm...EY190	3-4 1/2	3595	190	190	16000	6750	B7.50/20	DB7.50/20	Con 20R	6-4 1/2 x 4 1/2	Co Rus4	U4	No	Tim 58200H	BF	H	4.5	29.1	8 1/2 x 3 1/2 x 1 1/2	L		
13	Gramm...G	4-6	4345	190	210	18000	7700	B8.25/20	DB8.25/20	Lyc TS	6-4 1/2 x 5	Co Rus	U4	No	Tim 58200H	BF	H	4.3	27.9	8 1/2 x 3 1/2 x 1 1/2	L		
14	Gramm...G	4-6	3695	150	225	24000	7950	B9.00/20	DB9.00/20	Con 21R	6-4 1/2 x 4 1/2	BL 554	U4	No	Wis 1237H	2F	H	6.8	49.0	12x2 1/2 x 1 1/2	L		
15	Gramm...GW	5-7 1/2	5175	157	240	28000	9500	B9.00/20	DB9.00/20	Con 21R	6-4 1/2 x 4 1/2	BL 554	U4	No	Wis 1627KW	2F	H	6.3	41.0	7 1/2 x 3 1/2 x 1 1/2	L		
16	Gramm...HY	5-7 1/2	6595	210	236	22000	10100	B9.00/20	DB9.00/20	Con 16H	6-4 1/2 x 5	Fu HU16	U4	No	Wis 1527KW	2F	H	4.0	25.2	8 1/2 x 3 1/2 x 1 1/2	L		
17	Gramm...G-P	35-6 1/2-2	1535	156	160	12500	3800	B7.00/20	DB7.00/20	Lyc WTG	6-3 1/2 x 4	Fu MKU	U4	No	Tim 53200H	SF	H	5.37	34.9	8x2 1/2 x 1 1/2	L		
18	Gramm...G-P	(7) 45-6 1/2-2	2700	157	161	15500	4300	B7.50/20	DB7.50/20	Lyc SB	6-3 1/2 x 4 1/2	Fu MLU	U4	No	Tim 54200H	SF	H	6.35	38.0	8x2 1/2 x 1 1/2	L		
19	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc ASD	6-3 1/2 x 4 1/2	Fu JVU	U4	No	Tim 56200H	SF	H	7.25	55.0	9x3 1/2 x 1 1/2	L		
20	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc TS	6-3 1/2 x 4 1/2	Fu VUOG	U5	No	Tim 58200H	SF	H	7.80	56.0	10x3 1/2 x 1 1/2	L		
21	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Wau SRL	6-4 1/2 x 5 1/2	Fu VUOG	U5	No	Wis 1137H	2F	H	7.75	55.0	10x3 1/2 x 1 1/2	L		
22	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc AEC	8-3 1/2 x 4 1/2	Fu VUOG	U5	No	Wis 1137H	2F	H	7.25	51.2	11x3 1/2 x 1 1/2	L		
23	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Wau 6AB	6-4 1/2 x 5 1/2	Fu MHU	U4	No	Wis 1567W	2F	H	9.00	113.0	12x3 1/2 x 1 1/2	L		
24	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc ASD	6-3 1/2 x 4 1/2	Fu MKU	U4	No	Tim 53200H	SF	H	5.37	34.9	8x2 1/2 x 1 1/2	L		
25	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc TS	6-3 1/2 x 4 1/2	Fu JVUOG	U5	No	Tim 54000H	SF	H	6.35	45.2	8x2 1/2 x 1 1/2	L		
26	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Wau SRL	6-4 1/2 x 5 1/2	Fu VUOG	U5	No	Tim 58200H	SF	H	7.57	55.0	10x3 1/2 x 1 1/2	L		
27	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc AEC	8-3 1/2 x 4 1/2	Fu VUOG	U5	No	Tim 58200H	2F	H	7.57	55.0	10x3 1/2 x 1 1/2	L		
28	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Wau SRK	6-4 1/2 x 5 1/2	Fu VUDG	U5	No	Wis 1137W	2F	H	8.1	56.6	11x3 1/2 x 1 1/2	L		
29	Gramm...G-P	(7) 65-6 1/2-4	3185	154	191	19500	5900	B8.25/20	DB8.25/20	Lyc AED	8-3 1/2 x 4 1/2	Fu VUOG	U5	No	Wis 1137W	2F	H	9.00	63.7	11x3 1/2 x 1 1/2	L		
30	Hahn-Selden...	17 1/2	1500	142	162	7900	3750	P32x6	P32x6	Con 18E	6-3 1/2 x 4	BL 20	U4	No	Tim 52000H	BF	H	5.8	24.1	5 1/2 x 2 1/2 x 1 1/2	C		
31	Hahn-Selden...	317 1/2	1610	142	162	7900	3900	P32x6	P32x6	Con 16C	6-3 1/2 x 4	BL 35	U4	No	Tim 52000H	BF	H	5.8	24.1	5 1/2 x 2 1/2 x 1 1/2	C		
32	Hahn-Selden...	317 1/2	1935	151	181	10000	4800	P32x6	DP32x6	Con 16C	6-3 1/2 x 4	BL 35	U4	No	Tim 52000H	BF	H	5.8	31.0	5 1/2 x 2 1/2 x 1 1/2	C		
33	Hahn-Selden...	317 1/2	2820	164	190	13000	5800	P32x6	DP32x6	Con 16R	6-4 1/2 x 4	BL 35	U4	No	Tim 56200H	BF	H	6.1	33.0	5 1/2 x 2 1/2 x 1 1/2	C		
34	Hahn-Selden...	317 1/2	3785	151	198	15500	7200	P34x7	DP34x7	Con 18R	6-4 1/2 x 4	BL 51	U4	No	Tim 58000H	BF	H	6.8	37.0	7x3 1/2 x 1 1/2	C		
35	Hahn-Selden...	317 1/2	4435	151	198	19500	7800	P36x8	DP36x8	Con 18R	6-4 1/2 x 4	BL 51	U5	No	Wis 1237H	2F	H	7.3	43.8	7x3 1/2 x 1 1/2	C		
36	Hahn-Selden...	317 1/2	4975	151	198	23500	8700	P36x8	DP36x8	Con 21R	6-4 1/2 x 4	BL 55	A7	No	Wis 1537H	2F	H	7.1	67.0	7x3 1/2 x 1 1/2	C		
37	Hendrickson...	178 1/2	3350	Op	Op	15300	6500	B8.25/20	B8.25/20	Wau MK	6-4 1/2 x 4 1/2	Fu JVU	U5	No	Cla B800	2B	R	Opt	Opt	6x2 1/2 x 1 1/2	P		
38	Hendrickson...	178 1/2	3800	Op	Op	19500	7000	B9.00/20	B9.00/20	Wau MK	6-4 1/2 x 4 1/2	Fu JVU	U5	No	Cla B800	2F	R	Opt	Opt	6x2 1/2 x 1 1/2	P		
39	Hug...	U6-24	5200	Op	Op	24000	8200	B9.75/20	DB9.75/20	Wau 6SR	6-4 1/2 x 5 1/2	Fu JVUOG	U5	No	Tim 7527H	2F	H	7.00	111.0	8x3 1/2 x 1 1/2	P		
40	Hug...	U6-24	1785	146	191	11620	5620	B7.00/20	DB7.00/20	Bud H298	6-3 1/2 x 4 1/2	Fu MLU	U4	No	Cla B611	SF	H	5.66	36.0	8x3 1/2 x 1 1/2	P		
41	Hug...	U6-24	3020	111	111	14210	5400	B8.25/20	DB8.25/20	Bud H298	6-3 1/2 x 4 1/2	BL 51-4	U4	No	Wis 6600	2F	H	6.92	37.0	6x3 1/2 x 1 1/2	P		
42	Hug...	U6-24	3870	128	128	19300	7000	B9.00/20	DB9.00/20	Bud K369	6-4 1/2 x 4 1/2	Fu VUOG	U5	No	Wis 1237Q	2F	H	8.64	62.0	7x3 1/2 x 1 1/2	P		
43	Hug...	U6-24	2175	146	201	14500	6500	B8.25/20	DB8.25/20	Bud H298	6-3 1/2 x 4 1/2	Fu MLU	U4	No	Cla B800	SF	H	6.37	40.5	8x3 1/2 x 1 1/2	P		
44	Hug...	U6-24	5070	158	158	19620	7600	B9.75/20	DB9.75/20	Bud K428	6-4 1/2 x 4 1/2	Fu MRUAY	U4	A3	Wis 1237H	2F	H	8.95	119.0	8x3 1/2 x 1 1/2	P		
45	Hug...	U6-24	4300	128	128	22400	7800	B9															

Line Number	ENGINE DETAILS										Oiling System Type	Governor Make	Carburetors Make	Fuel Feed	FUEL SYST.	ELEC-TRICAL	Generator, Starter Make	Clutch Type and Make	Radiator Make	Universal Make	FRONT AXLE	Make and Model	BRAKES		BODY MOUNT-ING DATA		SPRINGS		Auxiliary Type				
	Piston Displacement	Compression Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Arrangement	Camshaft Drive	Piston Material	MAIN BEARINGS														Steering Gear Make	Make, Location Type, Operation	Lining Area	Drum Material	Hand Type, Location	Cab to Rear of Frame		Cab to Rear Axle	Width of Frame	Front	Rear
									Number and Diameter	Length																							
1299	4.9	198	33.7	85-2800	L	L	L	4-2 3/4	9 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 30000	Ros	L4IH	240	FD	81 1/4	51 1/4	34	36x2 1/2	45x2 1/2					
1224	4.9	146	25.3	85-2800	L	L	L	4-2 3/4	9 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	84	51 1/4	34	40x2 1/2	50x2 1/2					
3299	4.9	198	33.7	85-2800	L	L	L	4-2 3/4	9 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000	Ros	L4IH	260	FD	94	60 1/4	34	40x2 1/2	50x2 1/2					
4297	4.9	198	33.7	85-2800	L	L	L	4-2 3/4	9 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL	P.B.L	Pe	Blo	Tim 31000H	Ros	L4IH	260	FD	81	51 1/4	34	36x2 1/2	45x2 1/2					
2248	5.0	190	27.3	70-3000	L	L	L	7-2 3/4	10 1/2	PC	No	Til	M	AL	AL																		



Line Number	MAKE AND MODEL	Tonnage Rating	GENERAL (See Keynote)			TIRE SIZE		MAJOR UNITS										FRAME			
			Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	ENGINE		TRANSMISSION		REAR AXLE				GEAR RATIOS		Side Rail Dimensions	Type
										Make and Model	No. of Cylinders Bore and Stroke	Make and Model	Location and Forward Speeds	Aux. Location and Speeds	Make and Model	Gear and Type	Drive and Torque	In High	In Low		
1	Le Moon (concluded) 400	3-4	2175	163	190	15300	5000	B8.25/20	DB8.25/20	Wau 6MS	6-3 1/2 x 4 1/4	BL 314	U4	No	Tim 56200H	BF	R 6.16	40.6	6 1/2 x 3 1/4	C	
2	500	4-5	2775	160	190	19500	6000	B9.00/20	DB9.00/20	Wau 6MK	6-4 1/2 x 4 1/4	BL 514	U4	No	Tim 58200H	BF	R 6.14	40.6	7 1/4 x 1 1/4	C	
3	501	4-5	3150	160	190	19500	6500	B9.00/20	DB9.00/20	Wau 6SRL	6-4 1/2 x 5 1/4	Fu VUOG	U5	No	Tim 58200H	BF	R 6.14	40.6	7 1/4 x 1 1/4	C	
4	(9) 600	5-6	3450	169	199	21600	7200	B9.75/20	DB9.75/20	Wau 6SRL	6-4 1/2 x 5 1/4	Fu VUOG	U5	No	Tim 58200H	BF	R 6.00	43.2	7 1/4 x 1 1/4	C	
5	Maccar 36A	1 1/2-2 1/2	2050	155	183	12000	4850	P7.00/20	DP7.00/20	Bud H298	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 54200H	BF	R 4.86	32.7	6 1/2 x 3 1/4	C	
6	40A	2 1/2-3 1/4	2400	155	183	15000	5350	P7.50/20	DP7.50/20	Bud H298	6-3 1/2 x 4 1/2	BL 314	U4	No	Tim 56200H	BF	R 6.16	38.7	7 1/4 x 1 1/4	C	
7	50A	3-4	3350	153	194	18000	6200	P8.25/20	DP8.25/20	Bud DW6	6-3 1/2 x 5 1/4	BL 51	U4	No	Wls 6787L	2F	R 7.00	37.4	8 1/2 x 3 1/4	C	
8	60A	4-5	3950	153	207	18000	6600	P9.00/20	DP9.00/20	Bud BA6	6-4 1/2 x 5 1/4	BL 514	U4	No	Tim 75200H	2F	R 6.4	34.4	8 1/2 x 3 1/4	T	
9	70A	4-5	4750	153	207	22000	7300	B9.75/20	DB9.75/20	Bud BA6	6-4 1/2 x 5 1/4	BL 554	U4	No	Tim 65720H	WF	R 6.8	43.	8 1/2 x 3 1/4	T	
10	80A	4-5	5500	184	235	22000	8200	P9.75/20	DP9.75/20	Her YXCP3	6-4 1/2 x 5 1/4	BL 615	A5	No	Tim 65720H	WF	R 6.8	44.5	12 1/2 x 3 1/4	T	
11	90A	4-5	5950	184	235	30000	9500	P10.50/20	DP10.50/20	Her YXCP3	6-4 1/2 x 5 1/4	BL 70	A5	No	Tim 65720H	WF	R 6.8	49.8	12 1/2 x 3 1/4	T	
12	Mack BL	1-2	2500	138	148	9500	4050	B6.00/20	DB6.00/20	Own BL	6-3 1/2 x 5	Own BG	U4	No	Tim 52000B2	SF	R 5.66	27.9	7 1/4 x 3 1/4	T	
13	BQ	1 1/2-3	3000	138	192	12000	4800	P32x6	DP32x6	Own BG	6-3 1/2 x 5	Own BG	U4	No	Own BG	SF	R 5.44	26.8	7 1/4 x 3 1/4	T	
14	BF	2 1/2-3 1/4	4200	156	198	16000	6800	B8.25/20	DB8.25/20	Own BG	6-3 1/2 x 5	Own BG	U4	No	Own AB	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
15	AB	3-5	4000	147	219	17500	6450	P34x7	DP34x7	Own AB	6-4 1/2 x 5	Own AB	U4	No	Own AB	CD	R 7.72	37.4	8 1/2 x 3 1/4	T	
16	AB	3-5	4200	147	219	17500	6700	P34x7	DP34x7	Own AB	6-4 1/2 x 5	Own AB	U4	No	Own AB	2F	R 7.58	36.7	8 1/2 x 3 1/4	T	
17	AB	3-5	4150	147	219	17500	6450	P34x7	DP34x7	Own BG	6-3 1/2 x 5	Own AB	U4	No	Own AB	CD	R 7.72	37.4	8 1/2 x 3 1/4	T	
18	AB	3-5	4500	147	219	17500	6700	P34x7	DP34x7	Own BG	6-3 1/2 x 5	Own AB	U4	No	Own AB	2F	R 7.58	36.7	8 1/2 x 3 1/4	T	
19	BM	3-5	4700	157	217	21500	7500	B9.00/20	DB9.00/20	Own BC	6-4 1/2 x 5 1/2	Own BC	U4	No	Own AC	2F	R 7.01	40.9	7 1/4 x 3 1/4	C	
20	BC	4-5	5250	162	228	28500	9400	B10.50/24	DB10.50/24	Own AC	6-4 1/2 x 5 1/2	Own AC	U4	No	Own AC	CD	R 7.58	44.5	8 1/2 x 3 1/4	C	
21	BC	4-5	5500	154	226	23500	8000	P36x8	DP36x8	Own BC	6-4 1/2 x 5	Own BC	U4	No	Own BC	2F	R 7.88	46.0	8 1/2 x 3 1/4	T	
22	BX	4-6	5750	160	214	24800	7900	B9.75/22	DB9.75/22	Own BX	6-4 1/2 x 5 1/2	Own BX	U4	No	Own BX	CD	R 7.88	55.2	9 1/2 x 3 1/4	C	
23	BX	4-6	5600	160	214	24700	8050	B9.75/22	DB9.75/22	Own BX	6-4 1/2 x 5 1/2	Own BX	U4	No	Own BX	2F	R 7.01	49.4	9 1/2 x 3 1/4	T	
24	BJ	5-8	6450	168	245	31500	9800	B10.50/22	DB10.50/22	Own BK	6-4 1/2 x 5 1/2	Own AL	A4	No	Own AK	2F	R 6.92	36.4	11 1/2 x 1 1/4	T	
25	BQ	5-8	6800	191	245	32600	10000	B10.50/22	DB10.50/22	Own BQ	6-4 1/2 x 5 1/2	Own BQ	A4	No	Own AK	2F	R 6.52	41.9	10 1/2 x 1 1/4	T	
26	AK	5-8	5150	162	228	28500	9500	B10.50/24	DB10.50/24	Own AC	6-4 1/2 x 5	Own AC	A4	No	Own AC	CD	R 7.88	55.2	9 1/2 x 3 1/4	C	
27	AK	5-8	5250	162	228	28500	9400	B10.50/24	DB10.50/24	Own AC	6-4 1/2 x 5	Own AC	A4	No	Own AC	2F	R 6.92	36.4	11 1/2 x 1 1/4	T	
28	AK	5-8	6450	174	240	32500	10400	B10.50/22	DB10.50/22	Own BK	6-4 1/2 x 5 1/2	Own AC	A4	No	Own AC	2F	R 6.92	44.5	8 1/2 x 3 1/4	C	
29	AC Light	5-8	4950	168	240	28000	9200	B10.50/24	DB10.50/24	Own AC	6-4 1/2 x 5	Own AC	J4	No	Own AC	CD	R 8.46	54.4	8 1/2 x 3 1/4	C	
30	AC Medium	7-10	5500	168	240	32000	9800	S36x6	DS40x6	Own AC	6-4 1/2 x 5	Own AC	J4	No	Own AC	CD	R 7.75	49.8	8 1/2 x 3 1/4	C	
31	AC Heavy	7-10	6000	168	240	37000	10150	S36x7	DS40x7	Own AC	6-4 1/2 x 5	Own AC	J4	No	Own AC	CD	R 8.95	57.4	8 1/2 x 3 1/4	C	
32	AC	6-9	6450	174	240	28500	11400	B10.50/24	DB10.50/24	Own BK	6-4 1/2 x 5 1/2	Own AC	A4	No	Own AC	CD	R 8.4	53.9	8 1/2 x 3 1/4	C	
33	AF	7 1/2-10	8500	191	191	36500	11700	S36x7	DS40x8	Own AP	6-4 1/2 x 5	Own AC	J4	No	Own AC	CD	R 8.31	53.9	8 1/2 x 3 1/4	C	
34	Mar-Herr. TL	2-3	3785	129	135	12000	4800	B7.50/20	DB7.50/20	Her JXC	6-3 1/2 x 4 1/4	BL 328	U4	No	Own Tim	SF	R 5.44	26.8	7 1/4 x 3 1/4	T	
35	TI	2-3	4285	158	188	12520	7250	B8.25/20	DB8.25/20	Her WXC	6-4 1/2 x 4 1/4	BL 328	U4	No	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
36	TI	2-3	4950	158	188	17200	7700	B8.25/22	DB8.25/22	Her WXC	6-4 1/2 x 4 1/4	Fu MGU	U4	A2	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
37	TI	3-4	5485	158	188	19370	8370	B9.00/20	DB9.00/20	Her WXC3	6-4 1/2 x 4 1/4	Fu MGU	U4	A2	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
38	TH-300	3-4	6285	163	193	20300	9300	B9.75/20	DB9.75/20	Her YXC	6-4 1/2 x 4 1/4	Fu JVOG	U5	A2	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
39	TH-310	4-5	6785	163	193	22260	9620	B9.75/20	DB9.75/20	Her YXC3	6-4 1/2 x 4 1/4	Fu VUOG	U5	A2	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
40	TH-320	5-6	7785	163	193	25120	10120	B9.75/22	DB9.75/22	Her RCX	6-4 1/2 x 4 1/4	Fu VUOG	U5	A2	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
41	TH-330	6-7	8585	198	228	31200	14200	B10.50/24	DB10.50/24	Her HXB	6-5 1/2 x 6	BL 724	U4	A3	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
42	TH-340	7-8	12500	198	228	33920	14920	B11.25/24	DB11.25/24	Her HXB	6-5 1/2 x 6	BL 734	U4	A3	Own Wis	2F	R 7.01	33.9	7 1/4 x 3 1/4	T	
43	Moreland. RR	9-12	1750	159	Op	9500	4195	B5.50/20	DB6.50/20	Con 16C	6-3 1/2 x 4 1/4	BL 224	U4	No	Tim 53200H	SF	R 5.66	35.0	7 1/4 x 2 1/4	T	
44	RR-12	12-15	1950	159	Op	12000	4585	B6.50/20	DB7.50/20	Con 16C	6-3 1/2 x 4 1/4	BL 224	U4	No	Tim 54200H	SF	R 5.83	36.1	7 1/4 x 2 1/4	T	
45	B13	15-2 1/2	2850	184	Op	15000	5815	B8.25/20	DB8.25/20	Her WXC	6-4 1/2 x 4 1/4	BL 234	U4	No	Tim 56200H	SF	R 6.17	40.9	9 1/2 x 3 1/4	T	
46	B16	18-4 1/2	3025	184	Op	18000	6195	B9.00/20	DB9.00/20	Her WXC	6-4 1/2 x 4 1/4	BL 325	U4	No	Tim 58200H	SF	R 6.13	40.9	9 1/2 x 3 1/4	T	
47	E16	18-4 1/2	3300	Op	Op	18000	6400	B9.00/20	DB9.00/20	Her WXC3	6-4 1/2 x 4 1/4	BL 325	U4	No	Tim 58200H	SF	R 6.13	40.9	9 1/2 x 3 1/4	T	
48	E19	21-5 1/2	3800	184	Op	21000	7155	B9.75/20	DB9.75/20	Her WXC3	6-4 1/2 x 4 1/4	BL 525	U4	No	Tim 65720H	FW	R 7.25				

Line Number	ENGINE DETAILS										FUEL SYST.	ELEC-TRICAL	FRONT AXLE	BRAKES		BODY MOUNT-ING DATA		SPRINGS		Auxiliary Type											
	Piston Displacement	Compression Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Arrangement	Camshaft Drive	Piston Material	MAIN BEARINGS					Governor Make	Carburetors Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Clutch Type and Make		Radiator Make	Universals Make	Steering Gear Make	SERVICE		Hand Type, Location	Cab to Rear Axle	Width of Frame	Front	Rear	
									Number and Diameter	Length														Make, Location Type, Operation	Lining Area						Cab to Rear Axle
1315	4.6	200	33.7	72-2500	L	L	L	C	7-2 1/2	12 1/2	PC	No	Str	M	DR	DR	D.B.L	Ch	Spl	Tim 33000H	Ros	L4IH	345	C	TX	128	81	34	37 1/2 x 2 1/2	50 1/2 x 2 1/2	N
2381	4.4	242	40.8	85-2500	L	L	L	C	7-2 1/2	12 1/2	PC	No	Str	M	DR	DR	D.B.L	Ch	Spl	Tim 35000H	Ros	L4IHV	385	C	CD	128	81	34	39 1/2 x 2 1/2	53 1/2 x 2 1/2	N
3462	4.5	300	45.9	98-2000	L	L	L	C	7-3	13 1/2	PC	No	Str	M	DR	DR	D.Fu	Ch	Spl	Tim 35000H	Ros	L4IHV	385	C	CD	128	81	34	39 1/2 x 2 1/2	53 1/2 x 2 1/2	N
4462	4.5	300	45.9	98-2000	L	L	L	C	7-3	13 1/2	PC	No	Str	M	DR	DR	D.Fu	Ch	Spl	Tim 35000H	Ros	L4IHV	385	C	CD	128	81	34	39 1/2 x 2 1/2	53 1/2 x 2 1/2	N
5298	4.7	188	33.7	83-2800	L	L	L	C	7-3	9 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IH	293	a	TD	114	72 1/2	32	42 1/2 x 1 1/2	54 1/2 x 2 1/2	N
6298	4.7	188	33.7	83-2800	L	L	L	C	7-3	9 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IHV	343	a	TD	114	72 1/2	32	42 1/2 x 1 1/2	54 1/2 x 2 1/2	N
7331	4.5	200	33.7	73-2100	L	L	L	C	4-2 1/2	9 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35020H	Ros	L4IHV	412	a	FD	107 1/2	70	32	42 1/2 x 1 1/2	54 1/2 x 2 1/2	N
8411	4.5	272	40.8	103-2100	L	L	L	C	4-2 1/2	9 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35020H	Ros	L4IHV	412	a	TD	104 1/2	68	32	42 1/2 x 1 1/2	54 1/2 x 2 1/2	N
9411	4.5	272	40.8	103-2100	L	L	L	C	4-2 1/2	9 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35020H	Ros	L4IHV	412	a	TD	104 1/2	68	32	42 1/2 x 1 1/2	54 1/2 x 2 1/2	N
10479	4.5	318	51.2	102-2000	L	L	L	C	7-3	14	PC	Ha	Zen	M	DR	DR	D.B.L	Pe	Spl	Tim 26450TW	Ros	W44A	618	a	TD	144	95	33	42 1/2 x 1 1/2	58 1/2 x 3 1/2	N
11479	4.5	318	51.2	102-2000	L	L	L	C	7-3	14	PC	Ha	Zen	M	DR	DR	D.B.L	Pe	Spl	Tim 26450TW	Ros	W44A	623	a	TD	144	95	33	42 1/2 x 1 1/2	58 1/2 x 3 1/2	N
12485	4.5	318	51.2	102-2000	L	L	L	C	7-3	14	PC	Ha	Zen	M	DR	DR	D.B.L	Pe	Spl	Tim 26450TW	Ros	W44A	623	a	TD	144	95	33	42 1/2 x 1 1/2	58 1/2 x 3 1/2	N
13309	4.7	183	31.5	75-2500	L	L	L	C	7-2 1/2	11 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	96	54 1/2	33	42 1/2 x 1 1/2	52 1/2 x 2 1/2	N
14309	4.7	183	31.5	75-2500	L	L	L	C	7-2 1/2	11 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	96	54 1/2	33	42 1/2 x 1 1/2	52 1/2 x 2 1/2	N
15283	4.7	183	31.5	75-2500	L	L	L	C	7-2 1/2	11 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	96	54 1/2	33	42 1/2 x 1 1/2	52 1/2 x 2 1/2	N
16283	4.7	183	31.5	75-2500	L	L	L	C	7-2 1/2	11 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	96	54 1/2	33	42 1/2 x 1 1/2	52 1/2 x 2 1/2	N
17309	4.7	183	31.5	75-2500	L	L	L	C	7-2 1/2	11 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	96	54 1/2	33	42 1/2 x 1 1/2	52 1/2 x 2 1/2	N
18309	4.7	183	31.5	75-2500	L	L	L	C	7-2 1/2	11 1/2	FP	Ha	Str	M	DR	DR	D.B.L	Pe	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	96	54 1/2	33	42 1/2 x 1 1/2	52 1/2 x 2 1/2	N
19414	4.5	261	38.4	94-2400	L	L	L	C	7-3	13 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
20414	4.5	261	38.4	94-2400	L	L	L	C	7-3	13 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
21414	4.5	261	38.4	94-2400	L	L	L	C	7-3	13 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
22484	4.7	292	43.4	104-2300	L	L	L	C	7-3	13 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
23484	4.7	292	43.4	104-2300	L	L	L	C	7-3	13 1/2	FP	Ha	Str	M	DR	DR	P.B.L	Pe	Spl	Tim 31000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
24525	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
25611	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
26471	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
27471	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
28471	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
29471	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
30471	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
31471	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
32525	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
33706	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
34282	4.8	350	48.6	125-2300	L	L	L	C	4-3 1/2	11 1/2	PS	Ow	Str	M	DR	DR	P.Ow	Ow	Spl	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
35339	4.7	215	38.4	76-2400	L	L	L	C	7-2 1/2	13 1/2	PC	Ha	Zen	M	DR	DR	P.B.L	Yo	Blo	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
36339	4.7	215	38.4	76-2400	L	L	L	C	7-2 1/2	13 1/2	PC	Ha	Zen	M	DR	DR	P.B.L	Yo	Blo	Tim 35000H	Ros	L4IHV	427	a	FX	120	73	33	42 1/2 x 1 1/2	56 1/2 x 3 1/2	N
37383	4.7	215	38.4	76-24																											



Line Number	MAKE AND MODEL	Wheels Driven—6-Wheelers	GENERAL (See Keynote)			TIRE SIZE		MAJOR UNITS							FRAME							
			Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	ENGINE		TRANSMISSION		REAR AXLE		Side Rail Dimensions	Type				
											Make and Model	No. of Cylinders Bore and Stroke	Make and Model	Location and Forward Speeds	Aux. Location and Speeds	Make and Model			Gear and Type	Drive and Torque	GEAR RATIOS	
																					In High	In Low
1	Sterling.....	FC90 4	4200	174	204	.....	7480	B9.00/20	DB9.00/20	Wau 6MK	6-4 1/4 x 5 1/4	Ownc UC7	U5 Op	Ownc	CD	R8.66	61.7	10x3 1/4 x 4 1/4	C			
2	..... (conc'd).....	FD90 4	3550	174	204	.....	7480	B9.00/20	DB9.00/20	Wau 6MK	6-4 1/4 x 5 1/4	Ownc UC7	U5 Op	Wls	2F	R8.0	57.0	10x3 1/4 x 4 1/4	C			
3	..... FW97, FD97.....	4-5	4225	192	222	.....	7955	P36x8	DP36x8	Wau 6MK	6-4 1/4 x 5 1/4	Ownc UC7	U4 Op	Tim	w/2	R7.75	51.6	12x3 1/4 x 4 1/4	C			
4	..... FW97S, FD97S.....	4-5	4490	192	222	.....	8200	P36x8	DP36x8	Wau 6MK	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Ownc	CD	R9.3	61.2	12x3 1/4 x 4 1/4	C			
5	..... FC100.....	5-5 1/2	4950	192	222	.....	7750	P36x8	DP36x8	Wau 6MK	6-4 1/4 x 5 1/4	Ownc UC2	U5 Op	Ownc	CD	R8.66	61.7	12x3 1/4 x 4 1/4	C			
6	..... FC105.....	5-5 1/2	5150	192	222	.....	8000	B9.00/20	DB9.00/20	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC	U5 Op	Ownc	CD	R8.20	54.6	12x3 1/4 x 4 1/4	C			
7	..... FW115, FD115.....	5-5 1/2	4805	192	222	.....	8750	P40x8	DP40x8	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Tim	w/2	R8.20	54.6	12x3 1/4 x 4 1/4	C			
8	..... FC107.....	5-5 1/2	5200	192	222	.....	8200	P36x8	DP36x8	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Ownc	CD	R8.20	54.6	12x3 1/4 x 4 1/4	C			
9	..... FC120.....	5-5 1/2	5350	192	222	.....	8550	P40x8	DP40x8	Wau 6MK	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Ownc	CD	R9.3	62.2	12x3 1/4 x 4 1/4	C			
10	..... FC120S.....	7-8	5650	192	222	.....	8400	B9.75/20	DB9.75/20	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Ownc	CD	R9.3	62.2	12x3 1/4 x 4 1/4	C			
11	..... FW140, FD140.....	7-8	6070	192	222	.....	10050	P40x8	DP42x9	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 J 3	Ownc	CD	R8.66	61.7	12x3 1/4 x 4 1/4	C			
12	..... FC135.....	7-8	5825	192	222	.....	8900	P40x8	DP40x8	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Tim	w/2	R10.0	66.6	15x3 1/4 x 4 1/4	C			
13	..... FC140.....	8-8 1/4	6500	200	230	.....	9350	P40x8	DP40x8	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Ownc	CD	R9.3	62.2	15x3 1/4 x 4 1/4	C			
14	..... FC145.....	8-8 1/4	6925	200	230	.....	10100	P40x8	DP40x8	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC2	U4 Op	Ownc	CD	R9.3	62.2	15x3 1/4 x 4 1/4	C			
15	..... FW170, FD170.....	9-10 1/2	6070	200	230	.....	10550	P40x8	DP44x10	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC8	U4 Op	Ownc	CD	R9.4	58.9	15x3 1/4 x 4 1/4	C			
16	..... FC170.....	9-10 1/2	7595	200	230	.....	10550	P40x8	DP42x9	Wau 6SR8	6-4 1/4 x 5 1/4	Ownc UC8	U4 Op	Tim	w/2	R10.0	62.7	15x3 1/4 x 4 1/4	C			
17	Stewart.....	30 1	695	130	160	.....	2977	B6.50/20	B6.50/20	Lyc AFE	4-3 1/4 x 4 1/4	WG T9	U4 No	Clc	CD	R9.4	58.9	15x3 1/4 x 4 1/4	C			
18	..... 30X.....	1 1/2	795	130	160	.....	3017	B6.50/20	B6.50/20	Lyc WTG	4-3 1/4 x 4 1/4	WG T9	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
19	..... 42X.....	1 1/2	795	134	176	.....	3525	B6.50/20	B6.50/20	Lyc SA	6-3 1/4 x 4 1/4	WG	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
20	..... 40XA.....	1 1/2	995	145	176	.....	3460	B6.50/20	DB6.50/20	Lyc SA	6-3 1/4 x 4 1/4	WG	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
21	..... 43X.....	2 1/2	995	145	176	.....	4005	B6.50/20	DB6.50/20	Lyc SB	6-3 1/4 x 4 1/4	WG	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
22	..... 43X.....	2 1/2	5195	145	176	.....	4015	B6.50/20	DB6.50/20	Lyc SB	6-3 1/4 x 4 1/4	WG	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
23	..... 49XS.....	2 1/2	1695	150	190	.....	4990	B7.00/20	DB7.00/20	Lyc ASD	6-3 1/4 x 4 1/4	Fu	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
24	..... 32X.....	2 1/2	1990	165	220	.....	5260	B7.00/20	DB7.00/20	Lyc ASD	6-3 1/4 x 4 1/4	Fu	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
25	..... 58-8.....	2 1/2	2390	170	226	.....	5970	B7.50/20	DB7.50/20	Lyc HFA	6-3 1/4 x 4 1/4	Fu	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
26	..... 18X.....	3 1/2	2690	165	220	.....	6400	B7.50/20	DB7.50/20	Lyc TS	6-3 1/4 x 4 1/4	Fu	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
27	..... 48-8.....	3 1/2	2990	170	241	.....	6750	B8.25/20	DB8.25/20	Lyc AEC	6-3 1/4 x 4 1/4	BL	U4 No	Clc	CD	R10.0	62.7	15x3 1/4 x 4 1/4	C			
28	..... 18X.....	3 1/2	3690	165	235	.....	7110	B9.00/20	DB9.00/20	Lyc TS	6-3 1/4 x 4 1/4	Fu	U4 A 3	Tim	WF	R7.25	127.9	9x2 1/4 x 4 1/4	T			
29	..... 38-8.....	3 1/2	3990	170	241	.....	7600	B9.00/20	DB9.00/20	Lyc ASD	6-4 1/4 x 5 1/4	BL	U4 A 3	Tim	WF	R7.25	127.9	9x2 1/4 x 4 1/4	T			
30	..... 38-8.....	3 1/2	3990	170	241	.....	7600	B9.00/20	DB9.00/20	Lyc ASD	6-4 1/4 x 5 1/4	BL	U4 A 3	Tim	WF	R7.25	127.9	9x2 1/4 x 4 1/4	T			
31	..... 31X.....	5	5190	165	235	.....	9340	B9.75/20	DB9.75/20	Lyc AEC	6-4 1/4 x 5 1/4	BL	U4 A 3	Tim	WF	R7.25	127.9	9x2 1/4 x 4 1/4	T			
32	..... 27XS.....	7	6190	165	235	.....	10300	B10.50/24	DB10.50/24	Lyc AEC	6-4 1/4 x 5 1/4	BL	U4 A 3	Tim	WF	R7.25	127.9	9x2 1/4 x 4 1/4	T			
33	Studebaker.....	S21 1 1/2	670	130	165	.....	2950	B6.00/20	P32x6	Ownc	6-3 1/4 x 4 1/4	War T9	U4 No	Clc	B373	SF	H5.66	35.8	7 1/2 x 2 1/4 x 4 1/4	T		
34	..... S41.....	2 1/2	895	141	165	.....	3770	B6.50/20	DB6.50/20	Ownc	6-3 1/4 x 4 1/4	War T9	U4 No	Clc	54200	SF	H6.8	43.5	7 1/2 x 2 1/4 x 4 1/4	T		
35	..... S120.....	2 1/2	1350	141	165	.....	4695	B6.50/20	DP32x6	Ownc	6-3 1/4 x 4 1/4	War T9	U4 A 2	Tim	58200	SF	H6.8	43.5	7 1/2 x 2 1/4 x 4 1/4	T		
36	Waite.....	FM 2 1/2-3	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
37	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
38	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
39	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
40	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
41	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
42	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
43	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
44	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
45	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
46	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
47	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
48	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1/4	P			
49	..... FMD.....	3 1/2-4	4500	120	144	.....	7500	B9.00/20	B9.00/20	Ownc 6MK	6-4 1/4 x 5 1/4	Ownc FN	U5 No	Ownc FN	2D	H7.0	60.0	12x2 1/4 x 4 1				

Line Number	ENGINE DETAILS										FUEL SYST.	ELEC-TRICAL			FRONT AXLE		BRAKES		BODY MOUNTING DATA			SPRINGS							
	Piston Displacement	Compression Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Arrangement	Camshaft Drive	Piston Material	MAIN BEARINGS								Service	Lining Area	Drum Material	Hand Type, Location	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type			
									Number and Diameter	Length	Oiling System Type	Governor Make	Carburetors Make	Fuel Feed	Ignition System Make	Generator, Starter Make											Clutch Type and Make	Radiator Make	Universal Make
1381	4.4	24.0	40.8	85-2500	L	G	G	C	7-2 3/4	12 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ha	O2IMV	466	JX	144	91	34	42x2 1/2	54x3
2381	4.4	24.0	40.8	85-2500	L	L	L	C	7-2 3/4	12 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ha	L4IHV	397	CX	144	91	34	42x2 1/2	54x3
3381	4.4	24.0	40.8	85-2500	L	L	L	C	7-2 3/4	12 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	L4IHV	664	CX	172	108	34	48x3	54x3
4381	4.5	30.0	45.9	102-2400	L	L	L	C	7-3	13 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	576	JX	172	108	34	48x3	54x3
5381	4.4	24.0	40.8	85-2500	L	L	L	C	7-2 3/4	12 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	562	JX	172	108	34	48x3	54x3
6411	4.6	26.0	40.8	85-2500	L	L	L	C	7-2 3/4	12 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	L4IHV	664	CX	172	108	34	48x3	54x3
7462	4.5	30.0	45.9	102-2400	L	L	L	C	7-3	13 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	576	JX	172	108	34	48x3	54x3
8462	4.5	30.0	45.9	102-2400	L	L	L	C	7-3	13 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	500	JX	172	108	34	48x3	54x3
9381	4.4	24.0	40.8	85-2500	L	L	L	C	7-2 3/4	12 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	558	JX	172	108	34	48x3	54x3
10462	4.5	30.0	45.9	102-2400	L	L	L	C	7-3	13 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	666	JX	168	107	34	48x3	54x3
11462	4.5	30.0	45.9	102-2400	L	L	L	C	7-3	13 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	666	JX	168	107	34	48x3	54x3
12462	4.5	30.0	45.9	102-2400	L	L	L	C	7-3	13 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	666	JX	168	107	34	48x3	54x3
13489	4.5	29.5	43.4	90-2000	L	L	L	C	7-3 1/2	14	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	W41A	690	CX	172	108	34	48x3	60x4
14549	4.5	33.0	48.6	99-2000	L	L	L	C	4-3 1/2	11	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	666	JX	168	107	34	48x3	54x3
15549	4.5	33.0	48.6	99-2000	L	L	L	C	4-3 1/2	11	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	W41A	690	CX	163	107	34	48x3	60x4
16777	4.4	44.0	60.0	125-2000	L	L	L	C	4-3 1/2	11	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	O2IMV	666	JX	168	107	34	48x3	54x3
17699	4.8	136	22.5	50-2600	L	L	L	C	3-2 3/4	7 1/2	PC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	257	TX	90	50	32	38x2 1/2	50x2 1/2
18201	4.8	136	22.5	50-2600	L	L	L	C	3-2 3/4	7 1/2	PC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	257	TX	90	50	32	38x2 1/2	50x2 1/2
19224	4.8	142	25.3	62-2800	L	L	L	C	4-2 3/4	8 1/2	PC	No	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	257	TX	103	62	32	38 1/2 x 2 1/2	50x2 1/2
20224	4.8	142	25.3	62-2800	L	L	L	C	4-2 3/4	8 1/2	PC	No	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	257	TX	103	62	32	38 1/2 x 2 1/2	50x2 1/2
21242	5.0	162	27.3	65-2800	L	L	L	C	4-2 3/4	8 1/2	CC	No	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	257	TX	103	62	32	38 1/2 x 2 1/2	50x2 1/2
22242	5.0	162	27.3	65-2800	L	L	L	C	4-2 3/4	8 1/2	CC	No	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	257	TX	103	62	32	38 1/2 x 2 1/2	50x2 1/2
23299	5.0	193	33.8	85-2750	L	L	L	C	4-2 3/4	9 1/2	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	308	TX	104	58	32	38x2 1/2	50x3
24299	5.0	193	33.8	85-2750	L	L	L	C	4-2 3/4	9 1/2	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	308	TX	104	58	32	38x2 1/2	50x3
25354	6.2	225	36.4	100-2800	L	L	L	C	5-2 3/4	11	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	453	TX	129	79	32	40x3	56x3
26322	5.2	225	36.4	100-2800	L	L	L	C	5-2 3/4	11	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	453	TX	129	79	32	40x3	56x3
27420	5.2	230	44.4	130-2800	L	L	L	C	5-2 3/4	12 1/2	FP	No	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IMV	348	TX	128	75	32	40x3	56x3
28354	4.6	224	36.2	90-2750	L	L	L	C	4-2 3/4	10	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IM	453	TX	126	76	32	40x3	56x3
29462	4.6	224	36.2	90-2750	L	L	L	C	4-2 3/4	10	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IMV	453	TX	126	75	32	40x3	56x3
30462	4.6	224	36.2	90-2750	L	L	L	C	4-2 3/4	10	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IMV	453	TX	126	75	32	40x3	56x3
31516	4.5	33.0	44.4	110-2000	L	L	L	C	5-2 3/4	12 1/2	FP	No	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IMV	453	TX	128	75	32	40x3	56x3
32516	4.5	33.0	44.4	110-2000	L	L	L	C	5-2 3/4	12 1/2	FP	No	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	B4IMV	453	TX	128	75	32	40x3	56x3
33230	4.6	154	25.4	75-3200	L	L	L	C	4-2 3/4	8 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	W41A	759	TX	128	75	34	40x3	56x3 1/2
34230	4.6	154	25.4	75-3200	L	L	L	C	4-2 3/4	8 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	W41A	759	TX	128	75	34	40x3	56x3 1/2
35230	4.6	154	25.4	75-3200	L	L	L	C	4-2 3/4	8 1/2	CC	Ha	Zen	M	DR	DR	D.Own	Mo	Spl	Tim	Ros	W41A	759	TX	128	75	34	40x3	56x3 1/2
36381	4.5	240	40.0	85-2200	L	L	L	C	4-2 3/4	12 1/2	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	O4FXM	450	FM	126	84	34	39x2 1/2	56x3
37462	4.5	30.0	46.0	100-1900	L	L	L	C	7-3	13 1/2	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	O4FXM	450	FM	126	84	34	39x2 1/2	56x3
38462	4.5	30.0	46.0	100-1900	L	L	L	C	7-3	13 1/2	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	O4FXM	450	FM	126	84	34	39x2 1/2	56x3
39462	4.5	30.0	46.0	100-1900	L	L	L	C	7-3	13 1/2	FP	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	O4FXM	450	FM	126	84	34	39x2 1/2	56x3
40677	4.5	44.0	60.0	130-1900	L	L	L	C	7-3 1/2	10	PC	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	O4FXM	450	FM	126	84	34	39x2 1/2	56x3
41677	4.5	44.0	60.0	130-1900	L	L	L	C	7-3 1/2	10	PC	Mo	Str	P	DR	DR	D.Own	Mo	Spl	Tim	Ros	O4FXM	450	FM	126	84	34	39x2 1/2	56x3
42358	4.6	228	38.4	77-2000	L	L	L	C	7-2 3/4	10	FP	Ha	Str	M	DR	DR	P.Own	Mo	Spl	Tim	Ros	L4IHV	348	TX	108	60	33	40x2 1/2	



Line Number	MAKE AND MODEL	Wheels Driven—6-Wheelers	GENERAL (See Key note)				TIRE SIZE		MAJOR UNITS										FRAME						
			Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight	Chassis Wt. (Stripped)	Front	Rear	ENGINE		TRANSMISSION		REAR AXLE				Side Rail Dimensions	Type					
											Make and Model	No. of Cylinders Bore and Stroke	Make and Model	Location and Forward Speeds	Aux. Location and Speeds	Make and Model	Gear and Type	Drive and Torque			GEAR RATIOS				
1	Federal. D28W	2R 3	1050	140	182	13750	3925	B6.00/20	P32x6	Con W10	4-3 1/2 x 4 1/2	WG T9	U4	No	Cla B373A	SF	H	6.38	40.8	6x2 1/2 x 1 1/2	C				
2	.....E28W	2R 3	1150	145	187	13750	3975	B6.00/20	P32x6	Con W10	4-3 1/2 x 4 1/2	WG T9	U4	No	Cla B373A	SF	H	6.38	40.8	6x2 1/2 x 1 1/2	C				
3	.....D2D	4R 3	1350	140	182	14000	4235	B6.00/20	P32x6	Con W10	4-3 1/2 x 4 1/2	WG T9	U4	No	Cla B373A	BF	H	6.38	40.8	6x2 1/2 x 1 1/2	C				
4	.....E2D	4R 3	1450	145	187	14000	4310	B6.00/20	P32x6	Con W10	4-3 1/2 x 4 1/2	WG T9	U4	No	Cla B373A	BF	H	6.38	40.8	6x2 1/2 x 1 1/2	C				
5	.....A68W	2R 4	1925	164	182	18500	6050	P32x6	DP32x6	Con 16C	6-3 1/2 x 4 1/2	Own 7776	A4	No	Cla B610A	BF	H	6.38	38.5	6x3 1/2 x 1 1/2	C				
6	.....A600SW	2R 4 1/2-5	2395	170	206	20000	7300	B7.50/20	DP32x6	Con E600	6-3 1/2 x 4 1/2	Own 7784	A4	No	Cla B642	BF	H	7.16	46.7	6x3 1/2 x 1 1/2	C				
7	.....A600D	4R 4 1/2-5	2795	170	206	20000	7700	B7.50/20	DP32x6	Con E600	6-3 1/2 x 4 1/2	Own 7784	A4	No	Cla B642	BF	H	7.16	46.7	6x3 1/2 x 1 1/2	C				
8	.....T108W	2R 7	3885	188	224	28000	9600	P34x7	DP34x7	Con 18P	6-4 1/2 x 5 1/2	BL 607	A7	No	Tim 58200H	BF	H	7.8	74.1	7 1/2 x 3 1/2 x 1 1/2	C				
9	F.W.D. MX6	Op 10-15	10500	170	200	48000	15000	P40x10	DP40x10	Wau RB	6-5 x 5 1/2	BL 714	U4	A	2 Wls	2F	H	8.36	173	10x3 1/2	C				
10	.....X6	4F 6-10	6400	170	Op	36000	12000	B9.00/20	DB9.00/20	Wau SRK	6-4 1/2 x 5 1/2	Own U	A5	Op	Own X	BF	H	7.35	73	7x3 1/2	C				
11	(6) Gen. Mo. T90	4R 5-7 1/4	5285	185	220	28000	9400	B7.50/20	DB7.50/20	Own 331	6-3 1/2 x 5	Own	U4	A	3 Own	WF	R	9.25	129	9 1/2 x 3 1/2 x 1 1/2	L				
12	.....T95	4R 7-11	7695	189	224	40000	13250	P34x7	DP34x7	Own 525	6-4 1/2 x 5 1/2	Own	U4	Op	Own	WF	R	9.50	53.3	9 1/2 x 4 1/2	L				
13	G-P. 75-68W	4R 6-8	6440	174	Op	39000	9500	B9.75/20	B11.25/20	Wau SRL	6-4 1/2 x 5 1/2	Fu VUOG	U5	No	Tim SW200	WF	R	7.50	53.0	11x3 1/2 x 1 1/2	L				
14	.....75-88W	4R 6-8	6400	174	Op	39000	9500	B9.75/20	B11.25/20	Lyc AEC	8-3 1/2 x 4 1/2	Fu VUOG	U5	No	Tim SW200	WF	R	7.50	53.0	11x3 1/2 x 1 1/2	L				
15	.....85-68W	4R 8-10	8695	189	Op	52000	12000	B10.50/24	B12.75/24	Wau 6AB	6-4 1/2 x 5 1/2	Fu MHU	U4	A	3 Wls SD310	DF	R	8.50	10.6	12x3 1/2 x 1 1/2	L				
16	.....95-68W	4R 10-12	9640	176	Op	52000	13000	B10.50/24	B13.50/24	Wau 6RB	6-5 x 5 1/2	Fu MHU	U4	A	3 Wls RD410	DF	R	10.2	128	14x3 1/2 x 1 1/2	L				
17	Hendricks n22D	4R 2-6	3900	Op	Op	21000	7000	B7.50/20	DB7.50/20	Wau MK	6-4 1/2 x 4 1/2	Fu JUV	U5	No	Own 985	2B	A	Opt	Opt	6x2 1/2 x 1 1/2	P				
18	.....36D	4R 5-12	6600	Op	Op	32500	11200	B9.00/20	DB9.00/20	Wau 6SRL	6-4 1/2 x 5 1/2	Fu VU	U5	No	Own 2513X	2B	A	Opt	Opt	8x3 1/2	P				
19	.....38D	4R 12	8000	Op	Op	40000	13200	B9.75/20	DB9.75/20	Wau 6SRL	6-4 1/2 x 5 1/2	BL 60-7	A7	No	Eat 44000	2F	A	Opt	Opt	8x3 1/2	P				
20	.....44D	4R 12	9000	Op	Op	42000	14000	B9.75/22	DB9.75/22	Wau RB	6-5 x 5 1/2	BL 70-7	A7	No	Eat 44000	2F	A	Opt	Opt	8x3 1/2	P				
21	Hug. 99	4R 10	1100	148	Op	58500	19100	S36x8	S40x16	Bud GFB	6-4 1/2 x 5 1/2	BL 714-703	U4	A	3 Wls SD410W	2F	R	7.4	45.8	7 1/2 x 3 1/2 x 1 1/2	C				
22	Ind. 958BT-151	2C	1675	168	186	20000	5500	P32x6	DP32x6	Her JXC	6-3 1/2 x 4 1/2	BL 224	U4	No	Tim SBT151	SF	T	7.4	45.8	7 1/2 x 3 1/2 x 1 1/2	C				
23	.....958W 75	4R	1735	168	186	20000	5800	P32x6	DP32x6	Her JXC	6-3 1/2 x 4 1/2	BL 224	U4	No	Tim SW75	WF	T	7.4	45.8	7 1/2 x 3 1/2 x 1 1/2	C				
24	.....178BT251	2C	3250	188	224	28000	8200	P34x7	DP34x7	Her YXC	6-4 1/2 x 4 1/2	BL 334	U4	Op	Tim SBT251	BF	R	6.1	37.8	8 1/2 x 3 1/2	TL				
25	.....178W251	4R	3475	188	224	28000	8500	P34x7	DP34x7	Her YXC	6-4 1/2 x 4 1/2	BL 334	U4	Op	Tim SW251	WF	R	6.2	38.1	8 1/2 x 3 1/2	TL				
26	Ken. 186SDT	2C 10	6450	205	235	10500	B9.00/20	DB9.00/20	Her YXC2	6-4 1/2 x 4 1/2	BL 1554	U4	A	3 Tim Sdt310W	2F	H	7.33	104	9x3 1/2	T					
27	.....241SDT	2C 10	6850	205	235	11000	B9.00/20	DB9.00/20	Her YXC2	6-4 1/2 x 4 1/2	BL 714	U4	A	3 Tim Sdt310W	2F	H	7.33	85.5	9x3 1/2	T					
28	.....346A	4R 10	8800	210	240	13000	B9.75/20	DB9.75/20	Has 160	6-4 1/2 x 5 1/2	BL 714	U4	A	3 Tim 310W	WF	H	7.25	84.5	8x3 1/2	C					
29	.....346B	4R 10	8550	210	240	14000	B9.75/20	DB9.75/20	Bud GF-6	6-4 1/2 x 6	BL 714	U4	A	3 Tim 310W	WF	H	7.25	98.4	8x3 1/2	C					
30	.....346C	4R 10	9500	210	240	14000	B9.75/20	DB9.75/20	Has 175	6-5 x 6	BL 714	U4	A	3 Tim 310W	WF	H	7.25	98.4	8x3 1/2	C					
31	.....386C	4R 10	10200	210	240	14500	B9.75/20	DB9.75/20	Has 175	6-5 x 6	BL 714	U4	A	3 Tim SW410W	WF	H	7.60	103	8x3 1/2	C					
32	Kleiber. 280	4R 7 1/4	6000	201	210	28000	10060	B9.00/20	DB9.00/20	Con 20R	6-4 1/2 x 4 1/2	BL 714-60	A7	A	7 Tim Sw200W	WF	R	7.75	73.6	7x3 1/2 x 1 1/2	P				
33	.....340	4R 10	7000	210	215	34000	11900	B9.75/20	DB9.75/20	Con 21R	6-4 1/2 x 4 1/2	BL 714-60	A7	A	3 Tim Sw300W	WF	R	9.33	88.6	8x3 1/2 x 1 1/2	P				
34	.....340T	4R 10	8000	215	225	34000	13650	B9.75/20	DB9.75/20	Con 22R	6-4 1/2 x 4 1/2	BL 714-60	A7	A	3 Tim Sw400W	WF	R	10.3	98.1	8x3 1/2 x 1 1/2	P				
35	La Fran. R. Q6	4R 9-12	12000	Op	260	40000	14900	B10.50/20	DB10.50/20	Own 312B	12-4 1/2	Fu VUOG	U5	No	Tim 63703-97H	WF	R	6.20	43.8	7x3 1/2	L				
36	LeMoon(9). 701	4R 5-6	4475	187	199	25500	8500	B8.25/20	DB8.25/20	Lyc AEC	8-3 1/2 x 4 1/2	Fu VUOG	U5	No	Tim 63703-97H	WF	R	6.20	43.8	7x3 1/2	L				
37	.....801	4R 6-7	5100	187	199	32500	9720	B9.00/20	DB9.00/20	Lyc AEC	8-3 1/2 x 4 1/2	Fu VUOG	U5	No	Tim 63703-97H	WF	R	6.20	43.8	7x3 1/2	L				
38	.....802	4R 6-7	5350	187	199	32500	9800	B9.00/20	DB9.00/20	Wau 6SRL	6-4 1/2 x 5 1/2	Fu VUOG	U5	No	Tim 63703-97H	WF	R	6.20	43.8	7x3 1/2	L				
39	.....900	4R 7-8	6775	191	203	36000	12000	B9.75/20	DB9.75/20	Wau 6SRL	6-4 1/2 x 5 1/2	BL 607	A7	No	Tim SW310W	WF	R	9.25	86.9	9x4 1/2	B				
40	.....1000	4R 8-10	7950	196	208	40000	12600	B9.75/24	DB9.75/24	Wau 6AB	6-4 1/2 x 5 1/2	BL 714	U4	A	3 Tim SW310W	WF	R	9.25	128	9x4 1/2	B				
41	.....1200	4R 10-12	8000	215	225	40000	14000	B9.75/24	DB9.75/24	Wau 6RB	6-5 x 5 1/2	BL 714	U4	A	3 Tim SW410W	WF	R	9.25	128	9x4 1/2	B				
42	Macar. SW36	4R 10-12	9000	216	260	38700	15100	B10.50/20	DB10.50/20	Her RXCP	6-4 1/2 x 5 1/2	BL 615	A5	No	Tim spec.	W4	A	9	59	12x3 1/2	C				
43	Mack. BX	4R	8150	178	207	35400	12000	B8.25/22	DB8.25/22	Own BX	6-4 1/2 x 5 1/2	Own BX	U4	No	Own BX6	2F	A	6.53	46.0	9 1/2 x 3 1/2	C				
44	.....AC	4R 8-15	8500	217	257	50500	14550	P40x8	DP40x8	Own BK	6-4 1/2 x 5 1/2	Own AC	J4	No	Own AC	CD	R	9.26	59	8x3 1/2	C				
45	.....AK	4R 8-15	9000	217	257	50500	15900	B9.75/22	DB9.75/22	Own BK	6-4 1/2 x 5 1/2	Own AC	A4	No	Own AC6	2F	A	7.46	47.8	8 1/2 x 3 1/2	C				
46	.....AP	4R 8-15	10500	217	257	51000	14850	P40x8	DP40x8	Own AP	6-5 x 6	Own AC	J4	No	Own AP	CD	R	9.26	59	8x3 1/2	C				
47	.....AP	4R 8-15	11000	217	257	50500	16400	B9.75/22	DB9.75/22	Own AP	6-5 x 6	Own AC	A4	No	Own AC6	2F	A	7.46	47.8	8 1/2 x 3 1/2	C				
48	Mord. RR-15A	4	2100	170	Op	15500	5000	B6.50/20	DB6.50/20																

Line Number	ENGINE DETAILS										FUEL SYST.	ELEC-TRICAL	FRONT AXLE	BRAKES			BODY MOUNT-ING DATA		SPRINGS											
	Piston Displacement	Compression Ratio	Torque lb. ft.	N.A.C.C. Rated H.P.	Max. Brake H.P. at R.P.M. Given	Valve Arrangement	Camshaft Drive	MAIN BEARINGS		Oiling System Type				Governor Make	Carburetors Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Clutch Type and Make	Radiator Make	Universal Make	Make and Model	Steering Gear Make	SERVICE		Hand Type, Location	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front
								Number and Diameter	Length		Lining Area	Drum Material																		
1	2000	4.7	126	24.0	48-2500	L	L	A 3-2 1/2	5 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F212	Ge	L6IH	312	P	TX	123	64 1/4	34	38x2 1/4	40 1/2 x 2 1/4	N
2	2155	5.1	137	27.3	60-2600	L	L	A 3-2 1/2	9 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F212	Ge	L6IH	312	P	TX	118	63 3/4	34	38x2 1/4	40 1/2 x 2 1/4	N
3	2000	4.7	126	24.0	48-2500	L	L	A 3-2 1/2	5 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F212	Ge	L6IH	312	P	TX	123	64 1/4	34	38x2 1/4	40 1/2 x 2 1/4	N
4	2155	5.1	137	27.3	60-2600	L	L	A 3-2 1/2	9 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F212	Ge	L6IH	312	P	TX	118	63 3/4	34	38x2 1/4	40 1/2 x 2 1/4	N
5	248	5.0	150	27.3	64-2600	L	L	A 3-2 1/2	10 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F304	Ros	L6IHV	414	a	TI	158	84	34	40x2 1/2	44x3	N
6	288	4.6	181	32.6	73-2600	L	L	A 3-2 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	495	a	TI	155	84	34	40x2 1/2	44x3	N
7	288	4.6	181	32.6	73-2600	L	L	A 3-2 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	495	a	TI	155	84	34	40x2 1/2	44x3	N
8	339	4.2	212	38.4	80-2200	L	L	A 3-2 1/2	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
9	677	4.4	460	60.0	125-2000	L	L	A 3-2 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
10	517	4.5	330	51.3	110-2400	L	L	A 3-2 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
11	331	4.4	230	33.7	94-2500	L	L	A 3-2 1/2	8 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
12	525	4.5	380	48.6	128-2100	L	L	A 3-2 1/2	14 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
13	462	4.6	300	45.9	100-2400	L	L	A 3-2 1/2	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
14	420	5.2	300	45.9	135-3000	L	L	A 3-2 1/2	15 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
15	549	4.5	335	48.6	100-2000	L	L	A 3-2 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
16	677	4.4	460	60.0	125-2000	L	L	A 3-2 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
17	381	4.6	240	40.8	87-2500	L	L	A 3-2 1/2	12 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
18	462	4.6	300	45.9	97-2000	L	L	A 3-2 1/2	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
19	462	4.6	300	45.9	97-2000	L	L	A 3-2 1/2	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
20	529	4.7	440	60.0	126-1850	L	L	A 3-2 1/2	10 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
21	638	4.3	410	54.1	126-1850	L	L	A 3-2 1/2	10 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
22	282	5.3	186	33.7	73-2800	L	L	A 7-2 1/2	10 1/2	CC	No	Str	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
23	282	5.3	186	33.7	73-2800	L	L	A 7-2 1/2	10 1/2	CC	No	Str	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
24	428	4.4	283	45.9	94-2200	L	L	A 7-3	14	CC	Ha	Str	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
25	428	4.4	283	45.9	94-2200	L	L	A 7-3	14	CC	Ha	Str	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
26	501	4.7	300	45.9	98-2200	L	L	A 7-3	14	CC	Ha	Str	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
27	453	4.9	330	48.6	110-2200	L	L	A 7-3	12 1/2	CC	Ha	Str	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
28	529	4.3	410	54.1	126-1850	L	L	A 3-2 1/2	10 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
29	638	4.3	410	54.1	126-1850	L	L	A 3-2 1/2	10 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
30	707	4.4	506	60.0	170-2000	H	C	A 7-3 1/2	11 1/2	CC	HS	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
31	707	4.4	506	60.0	170-2000	H	C	A 7-3 1/2	11 1/2	CC	HS	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
32	411	4.2	236	40.9	89-400	L	L	A 3-2 1/2	13 1/2	CC	No	Str	V	RB	DR	D. BL	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
33	427	4.2	267	45.9	100-2600	H	C	A 7-3 1/2	13 1/2	CC	No	Str	V	RB	DR	D. BL	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
34	638	4.2	234	40.9	120-2400	H	C	A 7-3 1/2	13 1/2	CC	No	Str	V	RB	DR	D. BL	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
35	529	4.9	330	48.6	112-2000	L	L	A 3-2 1/2	14 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
36	420	5.2	300	45.9	130-2800	L	L	A 3-2 1/2	12 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
37	420	5.2	300	45.9	130-2800	L	L	A 3-2 1/2	12 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
38	462	4.5	300	45.9	98-2000	L	L	A 7-3	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
39	462	4.5	300	45.9	98-2000	L	L	A 7-3	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
40	549	4.5	332	48.6	100-2000	L	L	A 4-3 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
41	677	4.6	460	60.0	127-2000	L	L	A 4-3 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
42	529	4.9	330	48.6	112-2000	L	L	A 3-2 1/2	14 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
43	468	4.7	292	43.4	104-2300	L	L	A 3-2 1/2	13 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N
44	525	4.8	350	48.6	125-2300	L	L	A 4-3 1/2	11 1/2	CC	Mo	Zen	M	DR	DR	P. BB	Lo	Cle	Cla F318	Ros	L6IHV	623	a	TI	182	102	34	42x2 1/2	50x3 1/2	N



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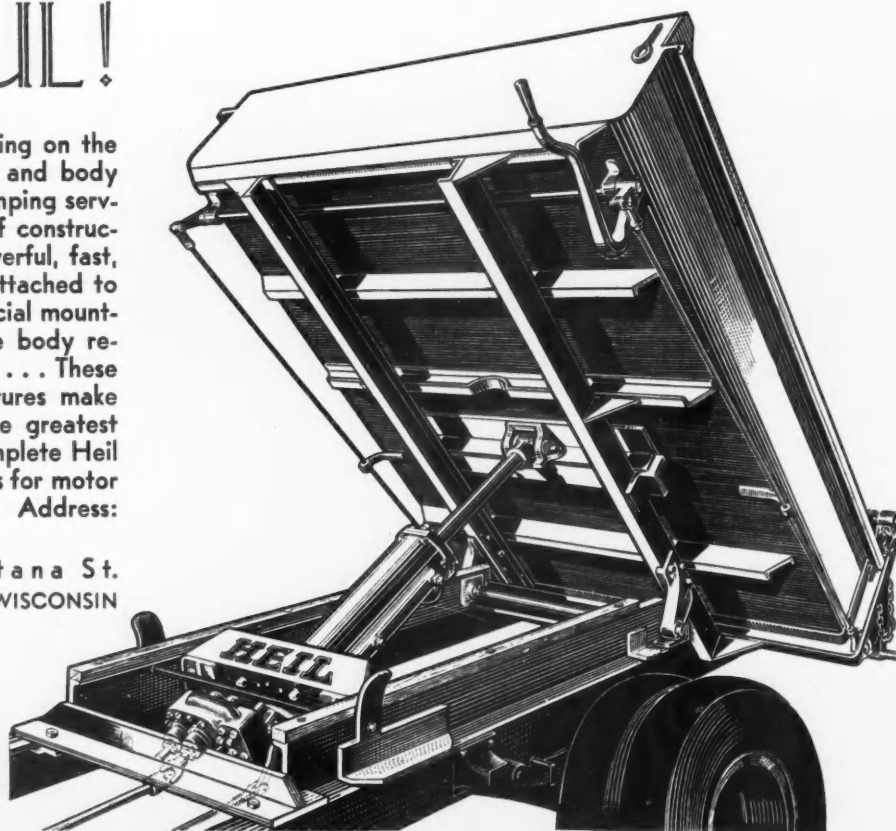
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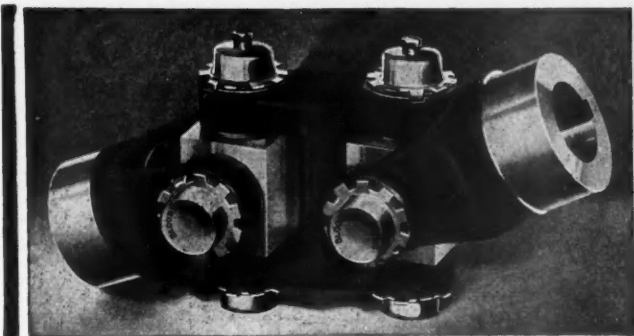
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Heil "SL" features:—Body cannot backtip—cab controls—high tailgate clearance—low mounting—50° dumping angle—two year guarantee—pipeless construction eliminates oil leaks—wood sills cushion body longmembers eliminating unnecessary body rattles—tailgate control handle readily accessible from cab - - - - - Write for bulletin "SL"-1.

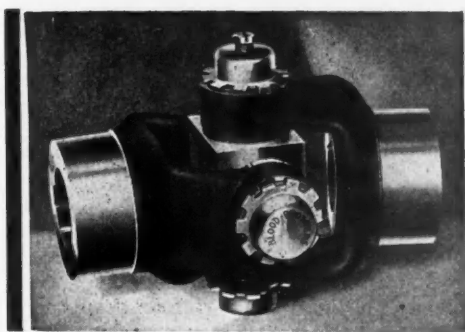


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## Don't Let Torque and Horsepower Mystify You

CONTINUED FROM PAGE 30

motion of the piston is translated into rotary motion of the shaft and pressure on the piston is transformed into a twisting action on the crankshaft.

The force which tends to turn or twist the shaft is called torque. A wrench pulling on a lag screw exerts torque, a door knob releases the lock by torque applied through the short shaft on which the knobs are mounted, we apply torque to a watch stem to wind the mainspring. Likewise torque revolves the propeller shaft which in turn turns the axle shafts and moves a truck.

Because torque is twist, a rotary force, it cannot be measured like a bag of sugar on scales, nor like a running board covering by foot rule. The ideal place to measure torque is the exact center of the shaft through which it is being transmitted. But we have no ready means of crawling into a point in the center of a revolving shaft and taking measurements of a force acting upon the shaft. We must measure the torque outside the shaft.

### Dynamometer Test

Torque and horsepower of an engine are determined by test in a machine for absorbing and measuring the power developed by an engine, called a dynamometer. The engine is connected up to *piping* and is operated as though in the truck chassis. Load is put on the engine by a brake on a drum or by a large dynamo and, after warming up, the throttle is opened wide and enough load rightly applied to keep the engine speed at the speed at which the test reading is desired. Torque is read as weight at the end of an arm attached to the brake or the dynamo. The more torque the engine develops the more friction or drag it takes to keep its speed down to a certain figure with the throttle wide open. This friction or drag tends to move the arm around with the crankshaft and the resistance needed to stop the arm from revolving is shown as weight. This is the first part of the torque figure.

The second factor is the length of the arm, or radius, between the center of the shaft and the point at which the weight is measured. If the arm is 1 ft. long the torque is expressed as the weight, that is, 120 lb. on an arm 1 ft. long equals 120 lb.-ft. The weight in pounds is multiplied by the length of the arm to give torque in pounds-feet, or pounds-inches. For example, 120 lb. weight on an arm 12 in. long gives 120 lb.-ft., or 80 lb. at the end of an 18 in. arm also equals 120 lb.-ft.

Torque shows the pulling ability of an engine, the force which produces drawbar pull in a truck. It does not show speed of either engine or truck and it is not the same as horsepower, although horsepower is based upon it.

Hill climbing ability may be calculated accurately from torque by a simple formula which will be explained in detail hereafter. Because of this application in estimating performance, torque is being used more and more by alert dealers and fleet owners.

An engine may show lots of torque and only limited horsepower; large heavy-duty, slow-speed engines come in this class. Other engines, such as high-speed racing engines, show large horsepower outputs with relatively small torque. These facts seem to be in conflict, but those who know the definition of horsepower will see the answer. Horsepower includes the three factors of weight, distance and time, whereas torque includes but two of them, weight and distance. Time, or the rate at which work is performed, is missing.

### Factor Relationship

Speed at which specified torque is developed must be known before horsepower can be calculated from torque. Speed given in revolutions per minute introduces the factor of time, and horsepower can then be calculated. Torque, given in pounds-feet, cannot be directly multiplied by revolutions per minute to determine horsepower. We must know how many feet the force we are measuring moves in a minute. To do this we imagine that the arm on the dynamometer revolves, at the speed in r.p.m. of the engine, against the resistance (torque) measured on the scales. Expressed in figures this means that twice the length of the arm is multiplied by the constant 3.1416 which gives the circumference of a circle representing the path of the end of the arm were it clamped to the crankshaft. This distance in feet multiplied by the number of revolutions of the engine gives the distance that the weight would be moved in a minute. Expressed in formula

$$HP. = \frac{\text{Torque} \times 2 \times 3.1416 \times \text{speed}}{33,000}$$

For easy figuring assume that an engine shows 300 lb. ft. of torque at 1600 r.p.m. Substituting we have

$$HP. = \frac{300 \times 2 \times 3.1416 \times 1600}{33,000} = 91$$

### Torque and Speed

If an engine developed the same torque all the way from low speed to high speed, horsepower would increase directly as the speed increases, but gasoline engines do not develop the same torque throughout their speed ranges. They show poor torque at very low speed, because they do not draw full charges into each cylinder on each stroke. Torque runs up to a maximum at less than maximum speed of the engine, in many instances at 1000 to 1200 r.p.m., and then falls off

gradually as speed increases and finally very rapidly until a point is reached at which the faster the engine runs the less power it develops. The reason for this falling off is that the gas cannot move fast enough to fill each cylinder on each suction stroke at high speeds.

Torque usually is given as the maximum which the engine develops and if desired the speed at which this torque is developed is given. Maximum horsepower is at another (and a higher) speed and is almost always given with the figure showing the speed at which the maximum horsepower is actually developed.

A formula for ready reckoning of horsepower, called the N.A.C.C. rating, is widely used for calculating horsepower for tax and registration purposes. It gives an approximate figure for horsepower derived from bore of the cylinders and number of

cylinders. The formula is  $HP = \frac{D^2 N}{2.5}$

in which  $D$  is diameter of one cylinder in inches,  $N$  is the number of cylinders and 2.5 is a constant. Applying the formula to an engine with six cylinders of 4-in. bore we have

$$\frac{4 \times 4 \times 6}{2.5} = 38.4 \text{ The maximum horsepower of one such engine listed in COMMERCIAL CAR JOURNAL Specifications Table is 82 at 2400 r.p.m.}$$

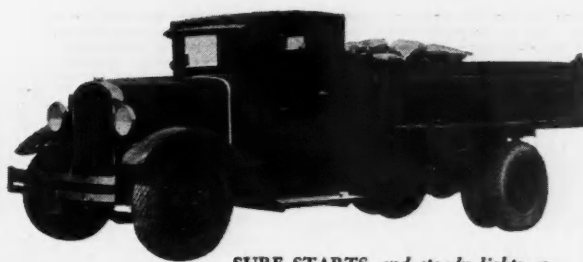
### S.A.E. Formula

Another way of calculating engine power from dimensions is the torque figure proposed in the S.A.E. rating formula. Instead of taking into account only the bore (as in the N.A.C.C. rating) the S.A.E. torque figure is based upon piston displacement, which includes of course both bore and stroke. Piston displacement is the volume in cubic inches of the space swept by pistons of an engine traveling from top to bottom dead center. Under ideal conditions it is the volume of gas taken into the cylinders during one suction stroke in each cylinder. Figured with pencil and paper it is equal to one-half the bore or radius of one-cylinder squared  $\times$  3.1416  $\times$  the stroke. For a six-cylinder 4  $\times$  4  $\frac{1}{4}$  in. engine we have piston displacement =  $2 \times 2 \times 3.1416 \times 4 \frac{1}{4} = 358.1$ .

Study of engine ratings shows that there is fairly close agreement between piston displacement and torque. There are variations, to be sure, but they are not numerous enough to seriously upset the assumption that torque may be estimated for performance calculations from piston displacement. The assumption so proposed is that piston displacement multiplied by .625 equals torque in pounds-feet.

How these factors are used in calculating performance of a truck under given operating conditions will be explained in a second article to appear in next month's issue.

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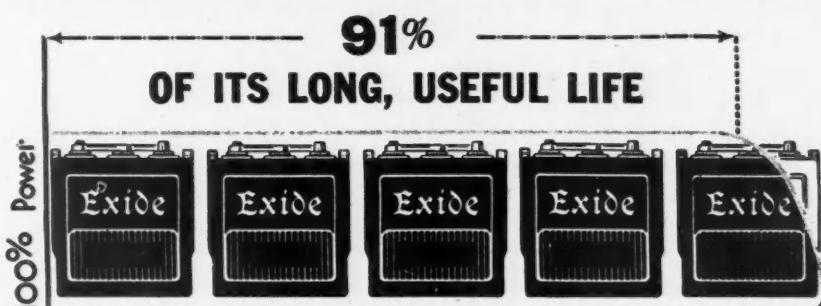
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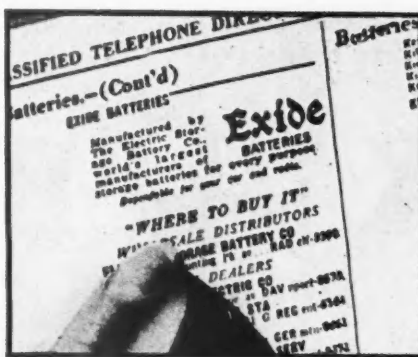
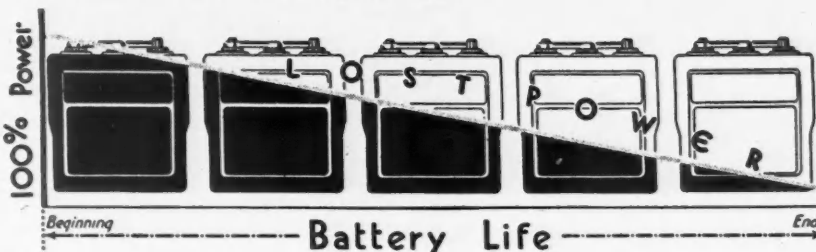
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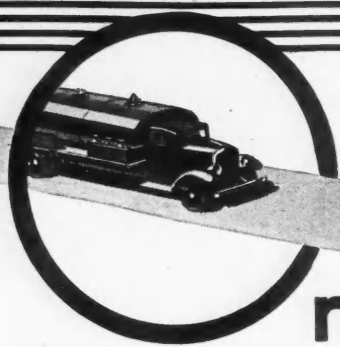
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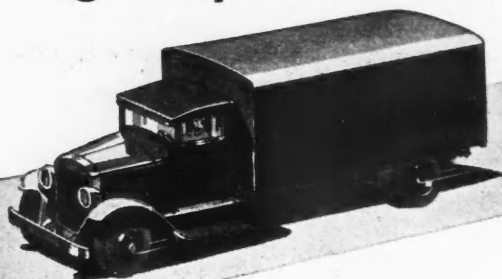
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(Subsidiary of Bendix Aviation Corporation)

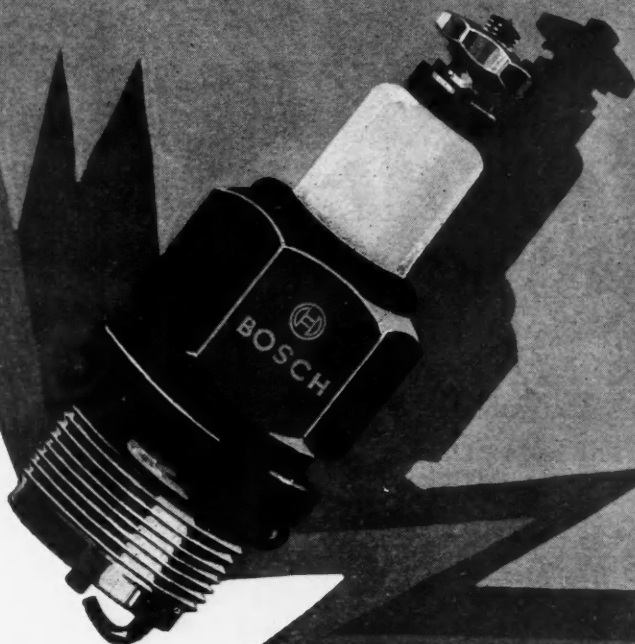
# BENDIX 4 BRAKES

FOR SAFETY

BENDIX MECHANICAL 4-WHEEL BRAKES • LOCKHEED HYDRAULIC BRAKES  
BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKES • B-K VACUUM BRAKE BOOSTERS

# BOSCH SPARK PLUG PRICES REDUCED

*Pyro-Action* SPARK PLUGS WERE \$1.00 - NOW 75¢, U.S. TAX PAID



**E**VEN at \$1.00, Bosch Pyro-Action Spark Plugs in actual bus service proved to be the lowest-cost-plugs-per-mile. Fleet records of Bosch Plugs averaging 25,000 miles, proved that time and again. Now, at the new reduced price of 75 cents for the very same quality, Bosch Plugs are more economical than ever. Now, at 75 cents, they give your engines Pyro-Action power and smoothness plus Bosch dependability, without any extra first cost. Any Bosch Service Station or Dealer will gladly help you select the Bosch Pyro-Action Spark Plug suited to your particular requirements.

**BOSCH**  
ROBERT BOSCH A. G.  
**Pyro-Action SPARK PLUGS**

TRADE  
MARK

PRODUCTS OF ROBERT BOSCH A. G.  
STUTTGART, GERMANY • SOLD BY

TRADE  
MARK

PRODUCTS OF AMERICAN BOSCH  
MANUFACTURED BY

**UNITED AMERICAN BOSCH CORPORATION**

SPRINGFIELD, MASS. Branches: NEW YORK CHICAGO DETROIT SAN FRANCISCO  
CANADIAN WAREHOUSE: TORONTO, CANADA



UNITED AMERICAN BOSCH CORP., SPRINGFIELD, MASS. SEND BOOKLET ON SUBJECTS CHECKED:

## BOSCH PRODUCTS

- ☐ Bosch Magnetos
- ☐ Bosch Spark Plugs
- ☐ Bosch Traffic Semaphores
- ☐ Bosch Horns
- ☐ Bosch Voltage-Regulated Generators

## AMERICAN BOSCH PRODUCTS

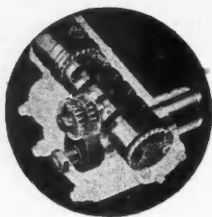
- ☐ American Bosch Magnetos
- ☐ American Bosch Coils
- ☐ American Bosch Motor Car Radio

(11)



WRITE NAME AND ADDRESS IN SPACE BELOW





**ENTIRE TRUCK FLEETS**

# **REPLACE WITH ROSS**

**FOR STEERING ECONOMY**

**I**T is a common thing for fleet operators to install Ross Steering as a replacement in all trucks that are not originally Ross-equipped. Operating and maintenance reports prove definitely that Ross Steering reduces costs—and drivers are emphatic in their preference for Ross performance.

It is a matter of record that most truck manufacturers and engineering staffs prefer Ross. An accurate check shows that 82 makers of trucks use Ross for original equipment. With such overwhelming engineering preference supporting their judgment, it is only natural that fleet owners should specify Ross when replacements are required.

The individual features of Ross Steering have become almost as famous as the steering itself. The exclusive precision adjustment features, for example, have so simplified steering maintenance that cost figures are pulled way down.

Adjustments are less frequently necessary with Ross and the labor costs are practically nothing. Also, these adjustments make it possible—almost invariably—to permanently maintain the orig-

inal easy, accurate Ross Steering effects for which Ross is noted.

There is only one cam and lever steering—Ross. Only in Ross can you get true cam and lever advantages. Ross Gear and Tool Company, Lafayette, Indiana.

**206**  
**Engineering Staffs**  
**Specify Ross**  
 ★  
*Fleet Owners Confirm*  
*Their Judgment*



# **ROSS**



**CAM AND LEVER STEERING • Roller-Mounted**

----- Cut Off Here and Mail -----

ROSS GEAR AND TOOL CO., Lafayette, Ind. Send complete information and prices on Ross Cam and Lever Steering for replacement installation.

Name.....Firm.....Make, Model and Year.....

Street Address.....City and State.....



## LOOK FOR MORE THAN STAMINA TO FIND THE BEST TRUCK VALUE

When you buy new trucking equipment of any type or size, make sure that it is designed and built to fit modern conditions. Stamina is important, to be sure. But even the time-tried trucks of yesterday may be costly investments today, if they are not adapted for the most advanced trucking practice.

The greatest truck value you can get is a soundly-built truck that fits its job, and that measures up to today's trucking standards. You will find it in a GMT. General Motors Trucks have always been

sturdy and dependable. The GMT line is complete. And GMT designs are up to the minute, for General Motors Truck engineers are constantly in touch with trucking operations in all sections of the country, and meet each changing requirement with a hauling unit that exactly fills the need.

See the General Motors Truck representative in your locality, or write direct to the factory, for full details on GMT trucks that are built to fit modern conditions.

**GENERAL MOTORS TRUCK CO., PONTIAC, MICH.**  
(A subsidiary of Yellow Truck & Coach Mfg. Company)

Time Payments Available Through Our Own Y. M. A. C.

General Motors Truck Company, Pontiac, Michigan  
Send me "Cutting Distribution Costs With Motor Trucks."

Name

Address

Business  28-H

# GENERAL MOTORS TRUCKS AND TRAILERS

THE RIGHT TRUCK FOR EVERY RUN—1½ TO 20 TON



SPICER • SPICER • SPICER • SPICER • SPICER • SPICER



"K" type bronze lined bushing here illustrated. "KR" or roller bearing joint is same design except roller bearings replace bronze lined bushings. These types are furnished for either standard or large angle installations.

# SPICER-

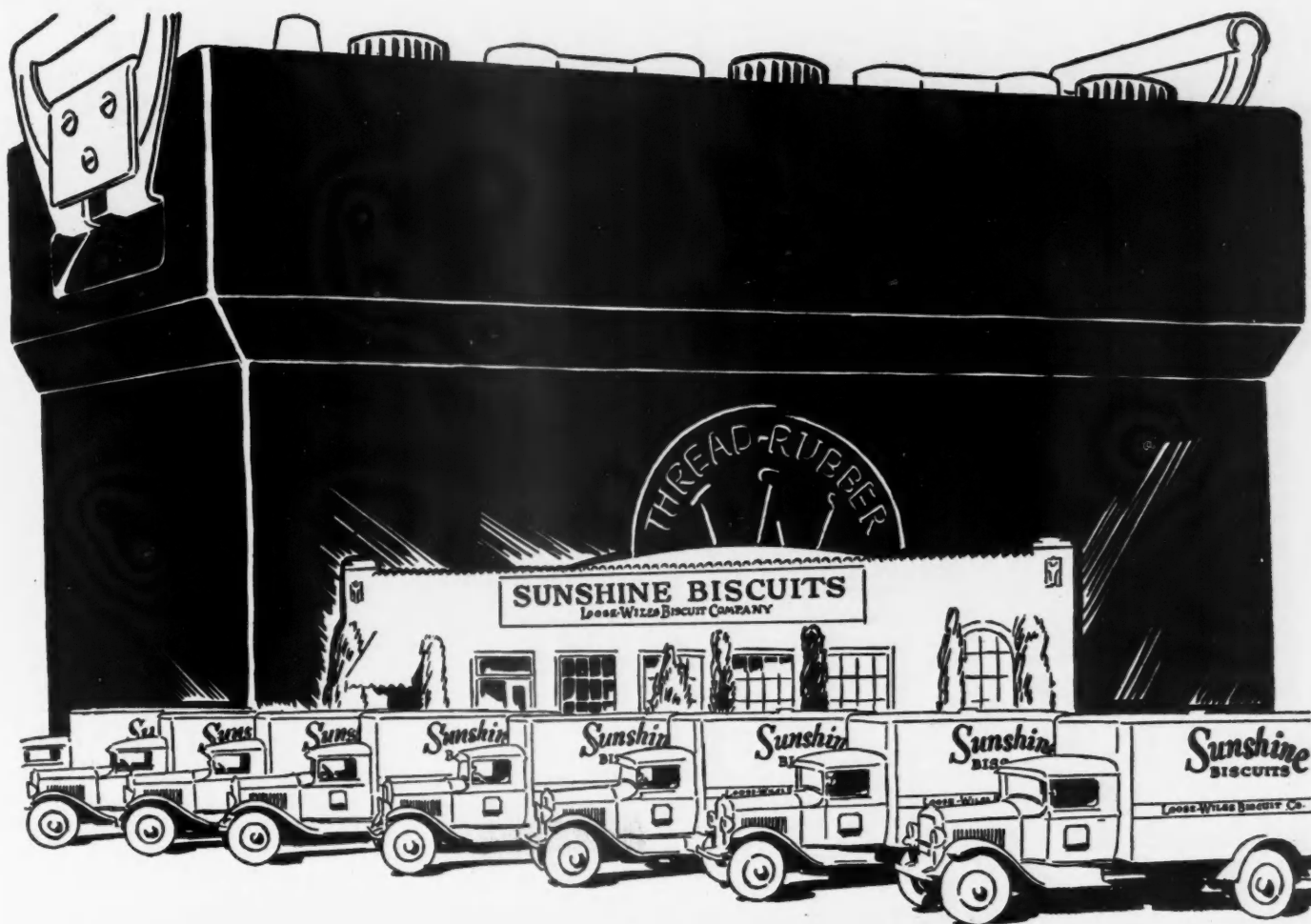
## "K" type

Roller Bearing Joints  
Bronze Bearing Joints  
Wide Angle Joints

of the type illustrated here all supplement the "IG" enclosed type joint making it possible for Spicer to offer the correct size and style for any truck, bus or passenger car installation.



**Spicer** MANUFACTURING CORPORATION  
TOLEDO, OHIO



## MORE MILES • MORE MONTHS with a WILLARD

Time on the road is the determining factor in trucking profits. And it's in helping to keep trucks on the road that Willard Batteries have proved their quality to fleet owners throughout America.

Rugged as the trucks, themselves. Built to give unusual service. You'll find, as others have found, that the dependable, economical service given by Willard Batteries will help you cut operating costs.

# Willard

STORAGE  
BATTERIES

WILLARD STORAGE BATTERY COMPANY • Cleveland • Los Angeles • Toronto, Ont.



*Everybody knows Raybestos*



**T**HE name Raybestos for more than a quarter of a century has been known and respected wherever the path of the automobile has led across the face of the globe.

Millions of motorists who read Liberty, the Saturday Evening Post and other publications, recognize in each Raybestos advertisement the name of an old trusted friend.

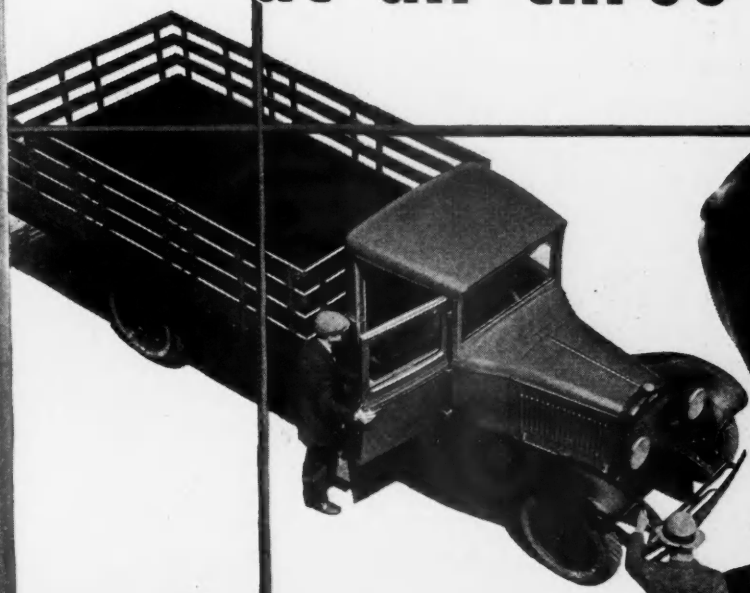
These motorists know that Raybestos Silver Edge Brake Linings have retained, through the years, its proud reputation as the safest,

most dependable, most satisfactory lining that can be produced.

Millions know this—millions more are learning it through this national advertising. All of which means to you, that many are going to ask for Raybestos by name. This advertising is making Raybestos easier to sell. It means an opportunity for you.

**THE RAYBESTOS DIVISION**  
of Raybestos-Manhattan, Inc.  
Bridgeport, Connecticut

**"I'M GLAD I looked  
at all three"**



You probably think of Dodge as a higher grade truck when you need a  $\frac{1}{2}$ -ton or  $1\frac{1}{2}$ -ton truck. And you're right . . . But have you kept posted on prices? Dodge is now right down at bottom in price—

one of the three lowest—with a  $\frac{1}{2}$ -ton chassis at \$375 and a  $1\frac{1}{2}$ -ton at \$525 f. o. b. factory, Detroit . . . and it's still a higher grade truck. Don't buy any low-priced truck until you look at all three.

**\$375**

4-cylinder  
 $\frac{1}{2}$ -ton Chassis

**DODGE  
TRUCKS**

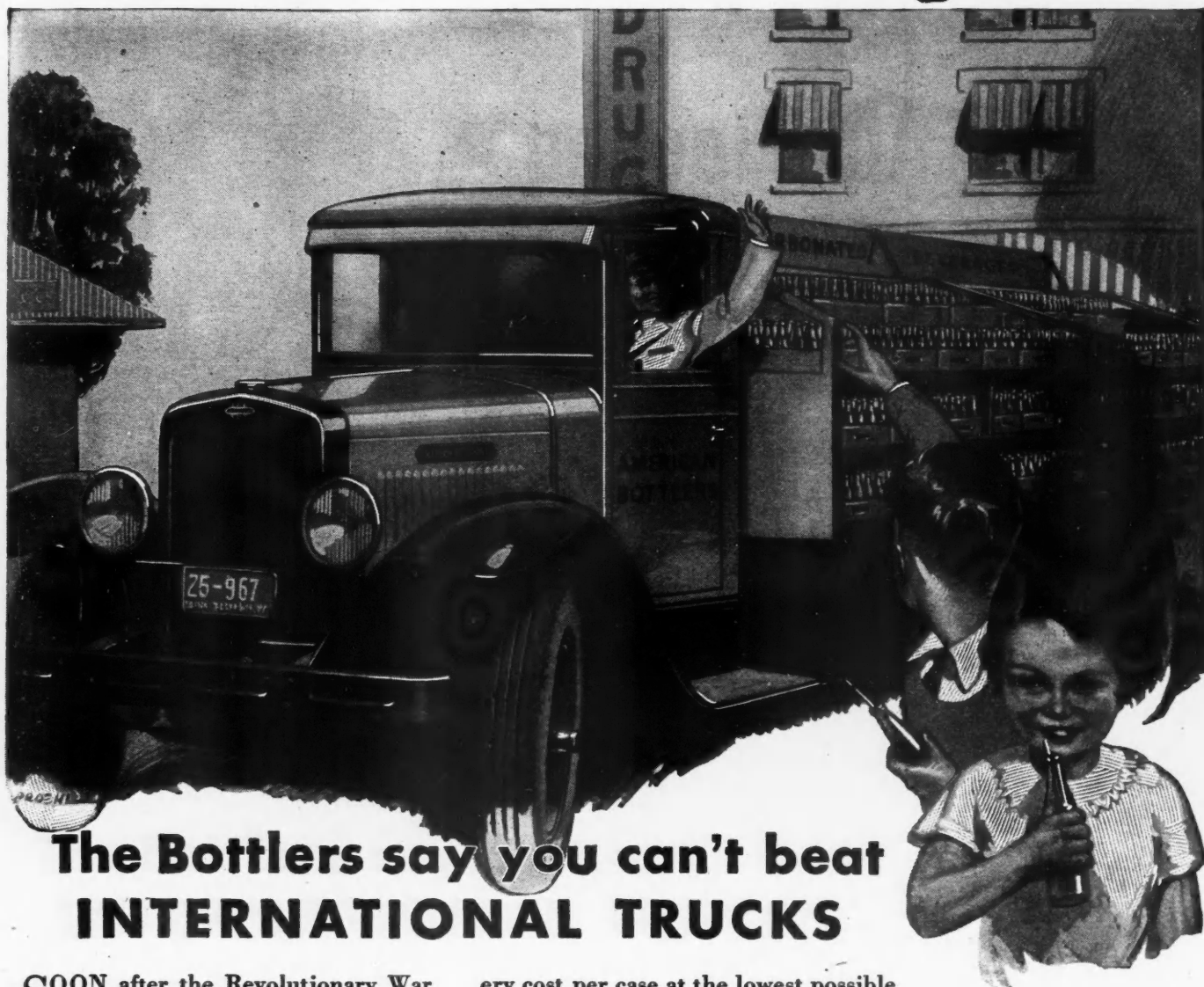
Payload Capacities up to  $7\frac{1}{2}$  tons

**\$525**

4-cylinder  
 $1\frac{1}{2}$ -ton Chassis



# These Trucks Are Cutting Costs



## The Bottlers say you can't beat INTERNATIONAL TRUCKS

SOON after the Revolutionary War, Townsend Speakman sold a new drink called "charged water" in his Philadelphia pharmacy. In 1807 he thought of adding fruit juices for flavoring... and that's how carbonated beverages began!

Today we buy bottled carbonated beverages of many flavors and many names. We drink the products of approximately 10,000 American bottlers, whose annual sales total between three and four hundred million dollars! We down each year the delicious contents of over *eleven billion* bottles!

Quality products, improved production and aggressive selling have all been factors in the tremendous growth and success of the bottling industry.

*So has distribution...* and that's where International Trucks come in! In this industry, where trucks must help to pay the dividends, Internationals keep deliv-

ery cost per case at the lowest possible figure. These sturdy trucks are as easy-riding as they are easy to handle... and they carry their breakable loads safely and swiftly under any conditions. Last, but by no means least, the striking appearance of Internationals is good advertising for their owners; for bottlers, butchers, and bakers, for businesses of every kind.

There are speed and heavy-duty Internationals to meet the need of every route of every bottler. And there are Internationals to meet the specific requirements, in body and chassis, of every other kind of business as well.

Have the nearest International Branch or Dealer arrange a demonstration to show what International Trucks will do for you, and how economically they will do it. Pick out any model you want, for a demonstration on your own job!

INTERNATIONAL HARVESTER COMPANY  
606 S. Michigan Ave. OF AMERICA  
(INCORPORATED) Chicago, Illinois

The Illustration shows the New  
1½-ton 6-cylinder Model A-3

### \$795

for the 136-in. wheelbase chassis f. o. b. factory (taxes extra). Other sizes from ¾-ton to 7½-ton. International Company - owned branches at 188 points in the United States and Canada.

#### Hauling at Low Cost

The Coca-Cola Bottling Company of Southwestern Arkansas (Camden, Ark.) kept records on a 2-ton 6-cylinder International for a year and found the operating cost to be under *6½ cents a mile*—all possible costs except driver's wages included. Truck covered 18,253 miles; on the job 312 days; 58 miles per day, mostly on gravel roads. *This example is typical of International economy.*

# INTERNATIONAL TRUCKS

# *New* FIRESTONE TYPE "R" RIM ONLY TWO PIECES *Both Continuous*

A BRAND new Firestone development—a rim with only two continuous pieces—no split members. Simple in design. Easy to operate.

Localized deflection, common to rims with a split member is eliminated in the new Firestone 5" and 6" Type R Rim. Rigid support for the entire circumference of the tire bead *minimizes bead failures and makes possible increased tire mileage.*

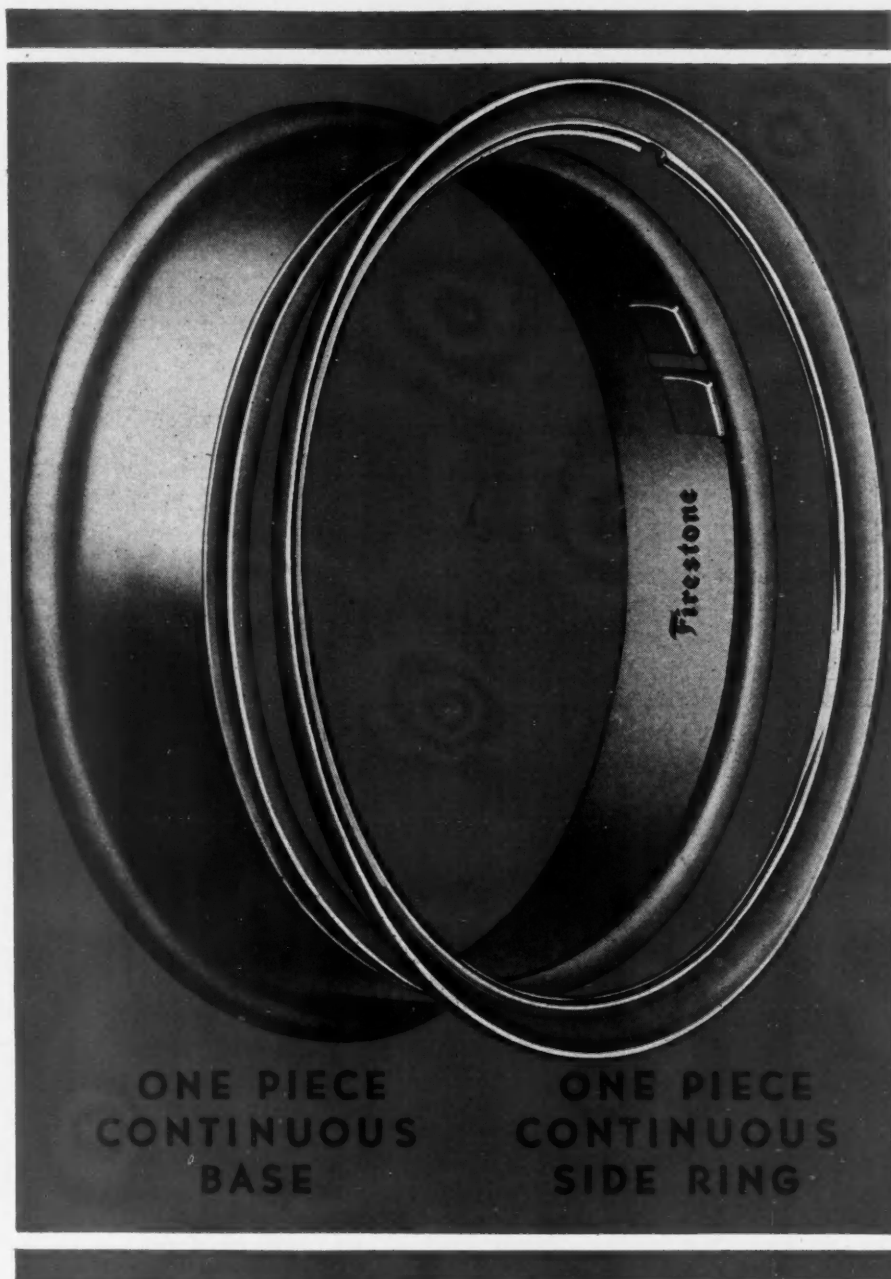
This new Firestone Rim is designed especially for the present day high speeds of light and medium duty trucks. It is available for either cast or disc wheels—Firestone Standardized 28° Bevel provides complete interchangeability on present equipment.

Specify Firestone Type R Rims on new equipment and changeovers.

A rim embodying this same principle has been developed for passenger cars, and is known as the Firestone Type "RP" Rim.

**THE FIRESTONE STEEL  
PRODUCTS CO.**

AKRON • OHIO



*Listen to the Voice of Firestone every Monday Night over N.B.C. nationwide network*

# Firestone

## Continuous Base RIMS

Copyright, 1932, The Firestone Steel Products Co.

*The Commercial Car Journal*

*August, 1932*



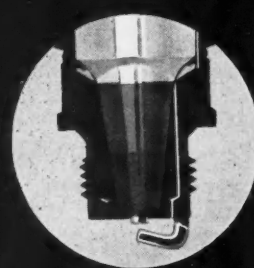
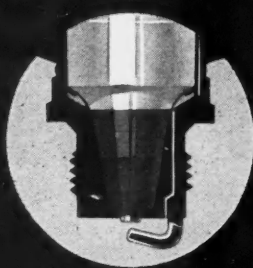
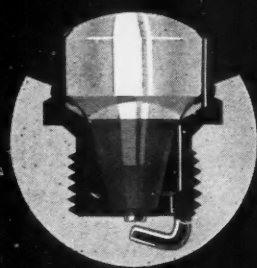
## AC LONG LIFE SPARK PLUGS AND THE AC HEAT RANGE SYSTEM ARE THE ANSWER TO YOUR SPARK PLUG PROBLEMS . . . .

The AC Heat Range System enables you to select the particular type of spark plug that will operate the engines in each kind of equipment you use, at maximum efficiency, that will give you maximum gasoline mileage, and that will resist common causes of plug failure and eliminate many roadside delays.



### THE AC HEAT

### RANGE SYSTEM



**In AC Long Life Spark Plugs the length of the exposed section of the insulator in the firing chamber, as illustrated above, governs the operating temperature of the plug.**

The AC heat range system shows you how to pick the type of spark plug that will give you best all-round performance in each kind of equipment you operate, as well as the plug that meets the most unusual operating conditions. When an engine "pings" due to pre-ignition, for example, or when spark plug electrodes burn away rapidly, the AC heat range system "prescribes" a plug with the same shell and thread size, but with a shorter insulator that will run cooler. To overcome chronic spark plug fouling,

the heat range system guides you to a plug with the same shell and thread size, but with a longer insulator that will run hot enough to burn away sooty formations. There is no bus or truck operating condition that cannot be fitted exactly with the correct AC Long Life spark plug, selected by this method. Guesswork is eliminated. The numbers of AC Long Life spark plugs designate their effective insulator length in sixteenths of an inch—the letters indicate the thread and shell size.

## NO OTHER MAKE OF SPARK PLUG HAS ANY OF AC's PATENTED EXTRA-PERFORMANCE ADVANTAGES

- 1 **STURDY, EXTRA-HEAVY INSULATOR**—The large-diameter insulators in AC Long Life spark plugs are an achievement of AC design and AC's patented one-piece construction. Their triple-ribbed design permits the use of a shorter and stronger top part, without danger of spark jump from terminal to shell.
- 2 **ONE-PIECE, HEAT-SEALED GAS-TIGHT CONSTRUCTION**—This design greatly retards the possibility of "blow-by" from over-heating; permits the use of heavy insulators; and insures uniform heat conductivity from the insulator to the shell. U. S. Patents No. 1,193,075 and No. 1,848,905 and others.
- 3 **SOLID COPPER GASKET**—The solid copper gasket is a heavy-duty feature of Long Life spark plugs which, AC engineers have found, insures the most nearly uniform heat conductivity, and gives the most permanent and the most effective seal against compression leakage. U. S. Patent No. 1,619,969.
- 4 **UNGLAZED INSULATOR TIP**—The AC unglazed insulator tip obviates encrustation on the hot end of spark plug insulators—the spongy "growths" which so often bridge the gap between insulator and shell and cause plug failures. No other spark plug can have this feature, because it is covered by U. S. Patents No. 1,386,883, and re-issue No. 15,585.
- 5 **LONG LIFE ELECTRODES OF PATENTED ISOVOLT METAL**—In isovolt electrodes, AC engineers have produced an electrode that actually helps the spark leave the wire, contributing materially to easy starting and long electrode life. Long Life spark plugs have double-weight electrodes of this remarkable alloy. U. S. Patents pending.
- 6 **ELECTRICALLY-WELDED SIDE ELECTRODE**—Welded side electrode construction gives perfect conduction of heat from the electrode, increasing electrode life, and reducing the possibility of pre-ignition. It is an exclusive AC advantage. U. S. Patent No. 1,309,423.

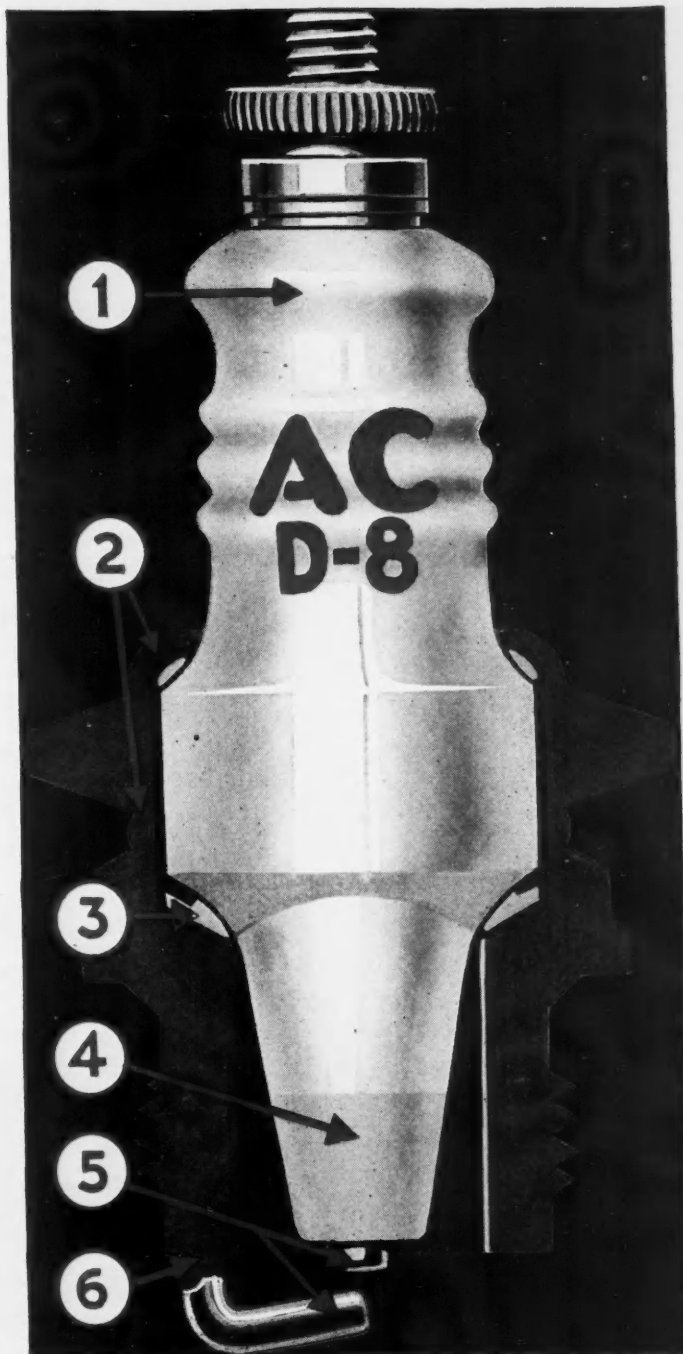
## AC LONG LIFE SPARK PLUGS OF THE CORRECT TYPE TO MEET YOUR REQUIREMENTS WILL GIVE YOU BETTER ENGINE PERFORMANCE..

You can avoid roadside delays due to spark plug failure . . . you can get better gasoline mileage and more powerful engine performance . . . by choosing spark plug types according to the AC heat range system. Let any AC representative or AC wholesaler's salesman show you which spark

### TEST SPARK PLUGS WITHOUT TAKING THEM OUT OF ENGINE with the new AC Tester



The new AC tester gives the only true indication of spark plug performance. It indicates whether plugs are missing at high speeds or under heavy loads, whether they need re-gapping, or whether they are altogether inoperative. It detects trouble anywhere in the ignition system. For it tests while the plugs are in the engine, hot, under actual compression, temperature and ignition conditions. Operation is simple—the indications are positive. The AC tester is sold regularly at \$8.00, or is available at extremely low prices in combination with spark plug orders.



plugs to use to get better all-round service, or to cure chronic fouling troubles, or to overcome pre-ignition, blow-by, or rapid burning away of electrodes. Or mail the coupon for complete AC heat range charts that take all the "guess" out of spark plug selection.

AC Spark Plug Company,  
Flint, Michigan.



Send us your free heat range charts covering the application of AC Long Life spark plugs to truck and bus engines.

Name

Firm

Address

City and State  B





# STEWART-WARNER

# *development in Control* **POWER BRAKES...**

## **WILL BE THE BIG TRUCK SELLING FEATURE OF 1933**

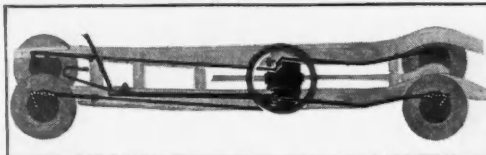
Stewart-Warner Power Brakes will sell trucks because they give the brake protection that today's faster highway speeds demand—at the lowest operating and maintenance cost.

The truck fleet operator who seeks better brake protection and a lower cost per ton mile, will be impressed with trucks equipped with Stewart-Warner Mechanical Power Brakes. No complicated service requiring boosters are needed. The power to apply these brakes, being derived from wheel traction, costs nothing and automatically adjusts itself to the speed and the load.

The Stewart-Warner Power Brake, instantly responsive to the driver's instinctive reaction, that puts under his command the giant power of car momentum and distributes it uniformly to all four wheels, meets today's driving conditions precisely. Make no mistake, it will be the big factor in selling trucks in which it is installed.

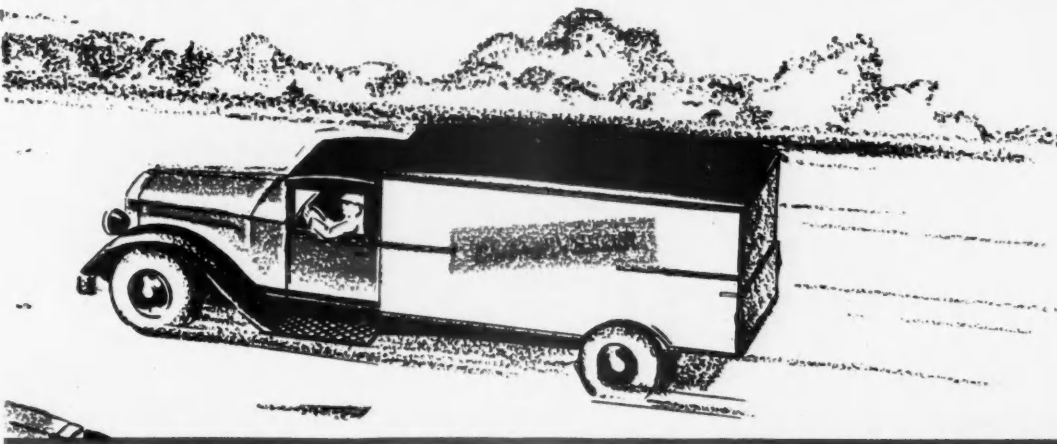
Stewart-Warner Power Brakes, because of their fewness of parts, simplify the production problem. No brake is easier to adjust or operates so long without adjustment. They may be installed in trucks, motor coaches and automobiles of every price class. Stewart-Warner Pedal-Operated Wheel Brakes without the power unit, also offer outstanding advantages in safety and low operating costs. Investigate.

Our engineers are at your command. Stewart-Warner Corporation, Chicago, U. S. A., or 6050 Cass Ave., Detroit, Mich.



### **FOR THOSE WHO DO NOT KNOW**

The driver's foot on the brake pedal accurately controls the power unit (shown in the red circle) which harnesses the giant force of car momentum to apply the brakes. Note the simplicity of the linkage, which distributes braking force uniformly to all four wheels. They are the simplest of all brakes to adjust. Complete data on Stewart-Warner Power and Pedal operated Brake Systems free for the asking.



# **BRAKE SYSTEMS**



✓ **BALANCED  
TRACTION**

✓ **ECONOMICAL  
OPERATION**

✓ **SPEED**

### YOU CAN CHECK THE FWD TRUCK ON ALL 3 POINTS

Combined in the FWD truck are the above three big advantages—A logical reason why the FWD handles all utility trucking jobs with the same dependability.

Whether it be road building and maintenance, pole setting and line work, or hauling capacity loads over long distances, the FWD will do the work more economically. It puts more of the developed power to actual work . . . its traction enables the FWD to get through "rough going"—up and down hills, in and out of ditches. The FWD is a good, powerful, economical, all-purpose utility truck, different in principle—it drives on all four wheels.

#### 110 PUBLIC UTILITIES USE FWD's IN FLEETS

FWD trucks are now owned and operated by 110 of the country's leading utilities companies—some of them have purchased over 100 FWD's. This is a splendid endorsement of the four-wheel drive truck.

#### THE FOUR WHEEL DRIVE AUTO COMPANY CLINTONVILLE, WIS.

Canadian Factory: Kitchener, Ontario

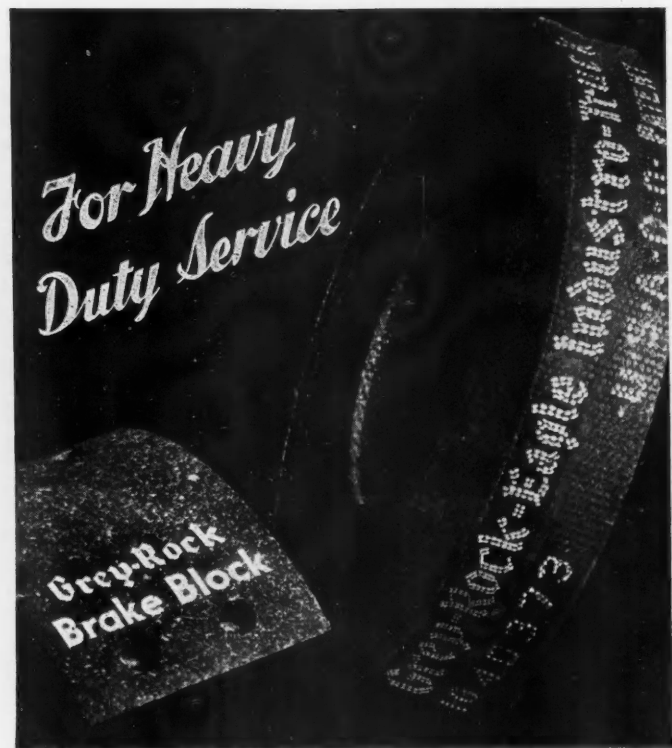


**FWD**  
BACKED BY

Let us tell you about our  
attractive dealer arrange-  
ment. Write today.

NATION-WIDE SERVICE

August, 1932



### GREY-ROCK INDUSTRO-TRUCK GREY-ROCK BRAKE BLOCKS

UNITED STATES ASBESTOS DIVISION  
of Raybestos-Manhattan, Inc. MANHEIM, PA.

## STURDINESS



MORE  
THAN  
EVER  
BEFORE

#### The Perfection Heavy Duty Hydraulic Hoist and Body Unit

With every part built for over capacity

RAISES—LOWERS—HOLDS IN ANY POSITION  
WHILE THE TRUCK IS IN MOTION OR STATIONARY

Built for hard use and long life—with less strain on the mechanism  
because the pressure point is AHEAD of the center of the load—TWO  
LIFT ARMS balance the body in any position.

WRITE TODAY—for Bulletins giving data and prices on the complete line of Bodies and Hoists for

#### CONTRACTOR—COAL—GARBAGE

The Perfection Steel Body Co. Galion, Ohio, U. S. A.

**PERFECTION**  
HYDRAULIC DUMPING UNIT

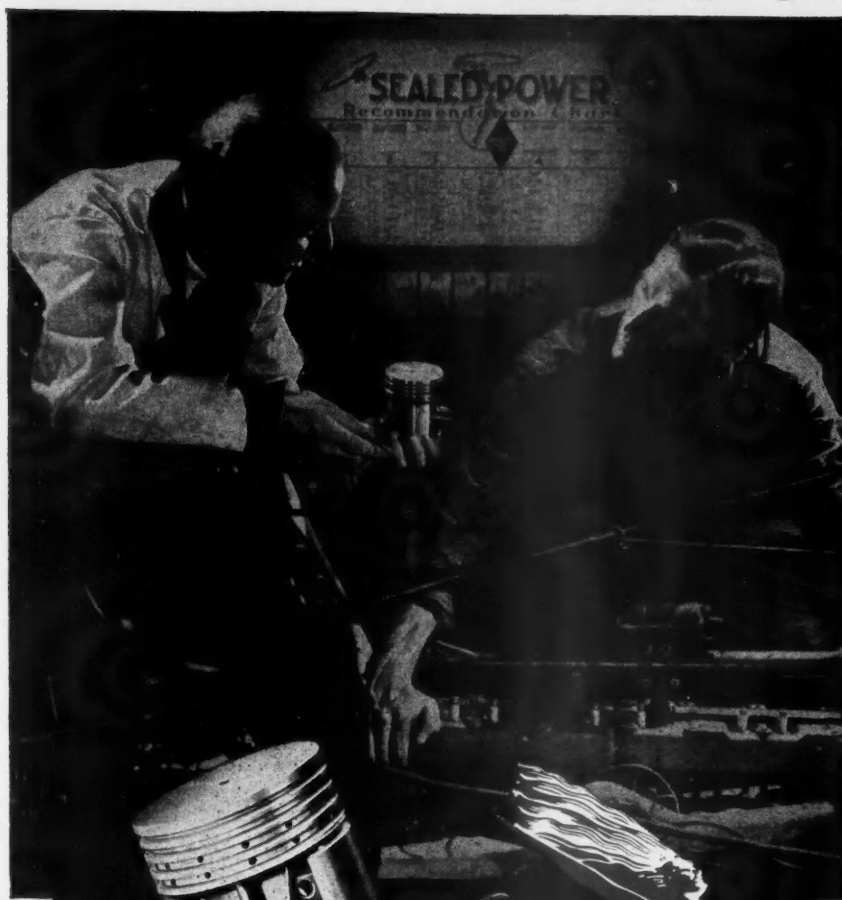
WITH THE  
CUSHION  
DROP  
MECHANISM

\$210.00  
F.O.B.  
GALION  
OHIO

The Commercial Car Journal

# Coordination

## AT ITS BEST



**W**hen you see a golf ball sail straight down the fairway for 300 yards or more you know it is the result of perfect timing. It is the result of coordination at its best.

Just so is coordination the very keynote . . . in sealing power.

Sealed Power Piston Rings, Pistons and Pins are coordinated to deliver power in a straight uninterrupted line from combustion chamber to crank shaft. Each part is balanced with the others to insure maximum performance.

Sealed Power field engineers are constantly working with fleet owners to prove Sealed Power is an essential economy.

Write for complete information about Sealed Power Chrome Nickel Cylinder Sleeves and how they can be adopted to your needs . . . save you money . . . step up shop efficiency and engine performance. They have already become standard shop practice in many of the largest fleet service shops.

SEALED  
POWER

PRODUCTS

### SEALED POWER CORPORATION

Formerly THE PISTON RING COMPANY

MUSKEGON, MICHIGAN



# WEAR-RESISTANCE CAN BE IMPROVED

with

## NICKEL CAST IRON

Leading engineers and manufacturers find in Nickel Cast Iron the answer to today's demand for improved wear-resistance. That's because no ordinary cast iron can render equally good performance...can give users such outstanding service records. If you are interested in obtaining higher and more uniform hardness...greater strength and toughness...improved machinability, specify Nickel Cast Iron.

**THE INTERNATIONAL NICKEL COMPANY, INC.**  
Miners, refiners and rollers of Nickel.  
Sole producers of Monel Metal.

67 WALL STREET

NEW YORK, N. Y.



**FREE**  
*Get One*



## 90 page booklet telling you how to build Alcoa Aluminum Truck Bodies

This book tells you how to build sills, posts, roofs, top rails, floors, panels, doors and gates of Alcoa Aluminum. It has bills of material and construction drawings for large and small dump bodies, large and small van bodies, grocery delivery, open top freight and insulated bodies. Use the coupon and get a copy today.

## ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA; 2439 Oliver Bldg., Pittsburgh, Pa.  
Please send me "Truck Body Book."

Name \_\_\_\_\_

Street and Number \_\_\_\_\_

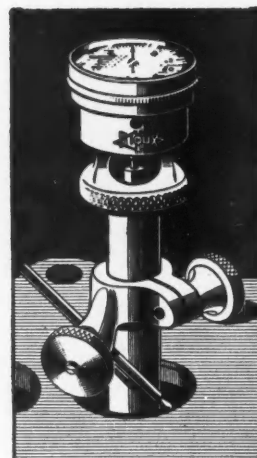
City \_\_\_\_\_

State \_\_\_\_\_

August, 1932



## TAPERED PILOT STEMS, REAMERS, and VALVE SEAT INDICATOR



make a quick easy job of refacing and  
checking valve seats and assure  
precision accuracy

*Your Jobber Sells Them*

**ALBERTSON & CO., Inc.**

Sioux City, Iowa, U. S. A.

## UTILITY Distributors are IN ALL PRINCIPAL EASTERN CITIES

Buffalo: Frey, the Wheelman, Inc., 520 Ellicott St.  
Cambridge: Perin-Walsh Co., Fifth & Bent Sts.  
Chicago: Schukraft & Co., 1201 Washington Blvd.  
Cleveland: Truck Engineering Corp., 1802 E. 38th St.  
Council Bluffs: Omaha Standard Body Co., 2411 W. Broadway  
Indianapolis: Indiana Wheel & Rim Co., 34 W. North St.  
Kansas City: National Steel Products Co., 1611 Crystal Ave.  
Long Island City: Metropolitan Truck Equipment Corp., Third St. & West Ave.  
Philadelphia: United Wheel and Rim Service, Inc., 1412 Fairmount Ave.  
Richmond: Baker Equipment Engineering Co., Summit & Rockbridge Sts.  
St. Louis: The Herman Body Co., 4420 Clayton Ave.  
Washington, D. C.: Washington Equipment Corp., 1003 Wisconsin Ave., N. W.

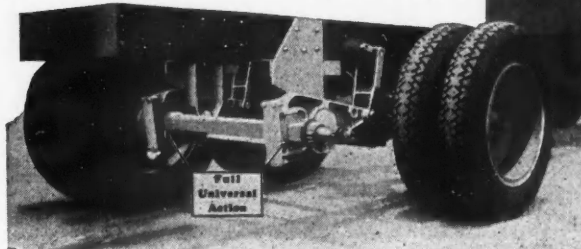
**T**HRU our new Factory Warehouse in New York City, these **UTILITY** distributors can secure all necessary equipment for new installations of **UTILITY Six Wheel Attachments**. This means prompt service for truck operators everywhere. Ask for a demonstration of **UTILITY Six Wheel Attachments** or write to

## UTILITY TRAILER MANUFACTURING COMPANY

P. O. Box 1407, Arcade Annex

LOS ANGELES

CALIFORNIA



The Commercial Car Journal

# GRAMM

## 3 to 5 Ton Trailer

### \$295.<sup>00</sup> \$345.<sup>00</sup>

Chassis less Supports  
at Delphos

Chassis with Supports  
at Delphos

A real quality product, designed by Gramm engineers and produced under the same careful methods as is the complete line of Gramm larger capacity trailers, tractors and trucks. Consider carefully these features:

Husky 8 $\frac{3}{4}$ " x 3 $\frac{1}{4}$ " x  $\frac{1}{4}$ " Drop Frame!

Timken 4" diameter Tubular Axle!  
Helper Springs Standard!

A complete line of Bodies, Brakes and Accessories to meet all requirements at low prices!

A very Generous Dealer Proposition!

Write or wire for complete  
information and prices

**GRAMM MOTORS, INC.**

Trailer Division

DELPHOS

OHIO

## DOES MORE WORK

Saves Time  
Increases  
Profits

In these days of lowered prices and careful managing a Red Reliable Jack will help you to make more profits because it does more work and reduces operating costs. Red Reliable is correctly designed and sturdily built for long years of dependable service. Write for complete catalog.



**RELIABLE  
TRUCK JACK**

No. 37. This popular jack has a low starting height and large raise. An ideal jack for trucks with 30 x 5 tires and larger.

The Elite Mfg. Co.  
110 Ohio St., Ashland, Ohio

Builders of Dependable Jacks for 27 Years

**RELIABLE**  
*Balloon tire* **JACKS**

## THEY RUBBED THEIR EYES

*.... and reached for their pens!*

**N**EVER before in trailer history has the industry been offered a plan like B & J's! Details were released just 60 days ago. Distributors were incredulous. They pronounced it a daring plan—but they reached for their pens and began beseeching us for complete details.



They said they wanted to get in on the ground floor—and they said it with orders!

Are you satisfied with your present profits? Do you want to make

some real money in the trailer industry—and develop for yourself a tremendous volume of business? You can do it with the revolutionary B & J Plan!

Now, B & J Trailers are the easiest in the world to sell—BUT YOU MUST FIRST HAVE ALL THE FACTS!

**B & J TRAILER CO.**

3913 S. Michigan Ave.

CHICAGO, ILLINOIS

### Here are a Few B & J Highlights

1. Lowest priced complete trailer sold.
2. Longest Haul per Dollar Cost.
3. Biggest Profits to both distributor and User.
4. Greater Payload Capacity—Less Weight.
5. World's leading automotive manufacturers help to build it.

*The B & J Plan is adjusted to the times.*

**Now Write for  
the Plan that  
Amazed the  
Industry!**

B & J Trailer Co.,  
3913 S. Michigan Ave.,  
Chicago, Ill.

Please send me at once full details of the B & J Plan.





**A Complete Line of LOCKS REGULATORS HINGES**

HANSEN Hardware embraces locks, regulators, hinges and handles, for every type of commercial body or cab—made extra strong to withstand severe service. It is standard with the majority of leading body builders. Request catalog.

**A. L. HANSEN MFG. CO.**  
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Chicago, Ill.

Designed by  
**HANSEN**  
Cable Address ALHANSENCO All Codes

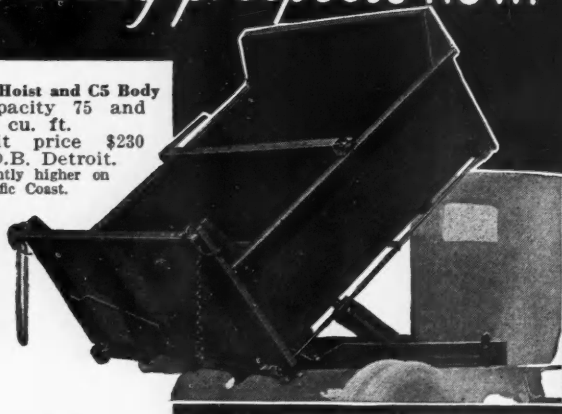
**HOT**  
*from the Printing Press*  
**New 1932 Edition of**  
*Fruehauf's Popular Booklet*  
**"ENGINEERED**  
**TRANSPORTATION"**

Full of up-to-the-minute haulage information—operating and maintenance cost tables—one of the most valuable handbooks ever offered Transportation Men—no advertising. Entirely free—no obligations—write for your copy today.

**FRUEHAUF TRAILER COMPANY**  
10957 Harper Avenue  
DETROIT, MICHIGAN

**COAL DEALERS**  
*are ready prospects NOW!*

D6 Hoist and C5 Body  
Capacity 75 and  
120 cu. ft.  
Unit price \$230  
F.O.B. Detroit.  
Slightly higher on  
Pacific Coast.



**THIS** combination body may be quickly converted from 75 cu. ft. (2 ton) coal to 120 cu. ft. (2 ton) coke capacity by adding steel or wooden side boards. Now is the time to interest coal dealer prospects with this money saving unit installed on your chassis.

Remember all Wood units are sold under Wood's lifetime guarantee.

Coal door, chute and swinging partition may be furnished at additional cost.

**WOOD HYDRAULIC HOIST AND BODY CO.**  
DETROIT MICHIGAN

**WOOD**  
HOISTS & BODIES

**Veeder-ROOT**

**HUB ODOMETER**

Records truck or bus mileage with the necessary accuracy to show costs-per-mile and control them. Proves the mileage-performance of different jobs; helps operator to get more mileage for his money. Comparative records of trucks or busses show up careless or wasteful handling; check up on drivers' efficiency.

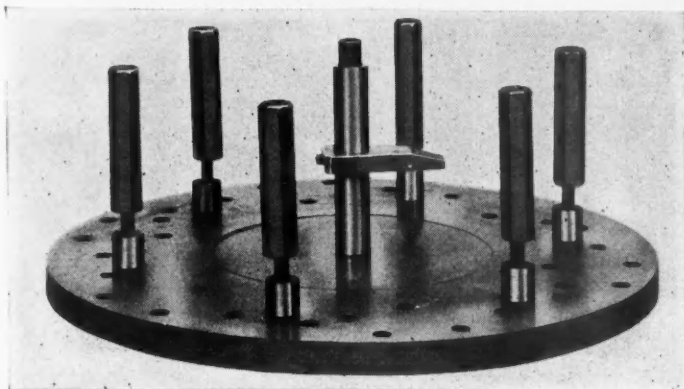
At right: regular model, adaptable to all standard trucks or busses. Special model for FORD commercial cars, complete with threaded hub for attaching.



VEEDER-ROOT CATALOGUE describes these mileage recorders, as well as complete line of Counters for all purposes. Let us know what you wish to count—automatically or by hand.

**Veeder-ROOT** INCORPORATED  
HARTFORD, CONN.

## LONG UNIVERSAL FIXTURE *For Reconditioning and Assembling Clutch Parts*



### An Added Service Now Available at Your Jobber

The Long Universal fixture is designed to operate without the usual necessity of the flywheel and will take care of the entire passenger car line of Long Clutches as well as many of other designs. It consists of a surface plate drilled to accommodate each model, 8 sets of height studs with extension hexagonal nuts, center spindle



sleeve and lever adjusting arm. This additional service, from the largest builder of clutches for original equipment, is particularly useful to the larger service shops and fleet owners.

Distributed by Borg-Warner Service Parts Company Warehouses and Sold by Leading Jobbers Everywhere.

**LONG MANUFACTURING COMPANY**  
DETROIT, MICHIGAN  
Division of Borg-Warner Corporation

## BUY carburetors on PERFORMANCE

... and you'll standardize on Zenith

—not a claim, a statement based on FACTS. The majority of truck manufacturers and many large fleets standardize on Zenith because of its *proved performance*. Ability to produce maximum engine efficiency at lowest cost in fuel and maintenance, under any condition of truck or bus service, makes Zenith the logical carburetor for YOUR commercial unit. *Get the facts!*

### ZENITH-DETROIT CORPORATION

Manufacturers of Zenith Carburetors & Filters

DETROIT . . New York . . Chicago . . Cleveland . . Milwaukee

**The Universal Carburetor**

# ZENITH

The Commercial Car Journal



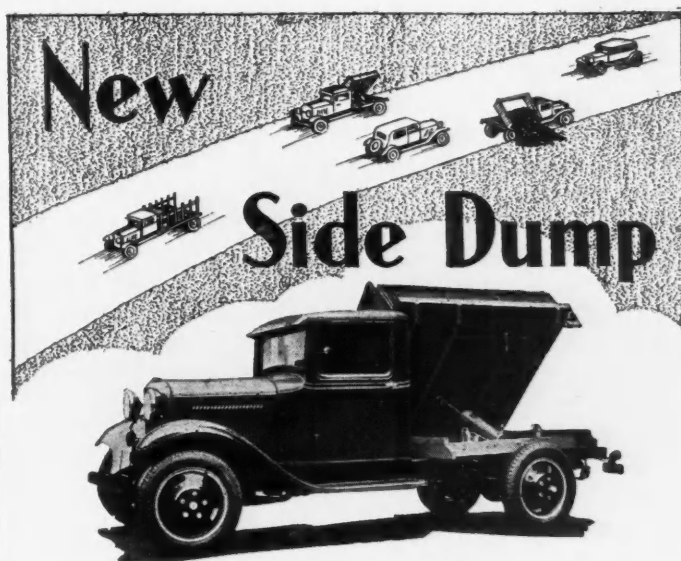
Model EF-4  
Six Ton Trailer  
With 4' Ribbed  
Steel Remov-  
able Side Body.

**Kingham**  
UNIVERSAL

TRAILER operators KNOW good equipment. "Kingham" has a trailer and a body for YOUR hauling job. Latest design—Sturdy UNIT construction—Light Weight—More Pay Load—Lower Operating Costs—More Profit.

WRITE WRITE WRITE

**KINGHAM TRAILER CO., INC.**  
235 E. Gaulbert Louisville, Ky.



## St. Paul Hoist

*For One and One-half Ton Trucks*

The new special side-dump 36UB St. Paul Underbody Hydraulic Hoist has been developed for road maintenance work. This equipment is widely used by Highway Departments for repairing shoulders, filling ruts and leaving stockpiles. It speeds up work and avoids maneuvering on highways or blocking traffic.

*Write for detailed circular.*

*"Ask the Dump Truck Driver on the Job"*

**St. Paul Hydraulic Hoist Company**

St. Paul, Minnesota

A St. Paul Hoist Distributor and Service Station is near you.  
Write for name and address.

August, 1932



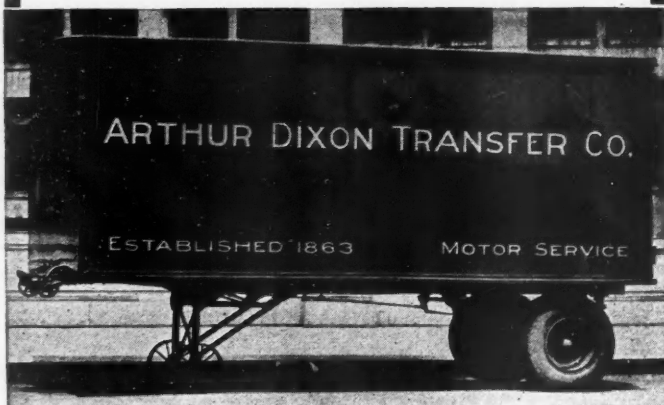
**190,000**  
**pounds**  
 per sq. inch  
**guaranteed**  
**elastic limit**

**THE MATHER SPRING COMPANY**  
**TOLEDO, OHIO**

*Manufacturers of Scientifically Heat Treated  
 Automobile Springs*



**HIGHLAND**  
**VAN BODIES and CABS**



One of 12 Highland Bodies recently built for  
 Arthur Dixon Transfer Co., Chicago

More than 40 years of knowing how have put Highland Bodies far in advance of others. Strongly made of either all aluminum, steel, or composite aluminum and wood; and including many exclusive advantages, these nationally famous Bodies thoroughly meet every requirement of modern, economical motor transportation. Complete information mailed on request.

**THE HIGHLAND BODY MFG. CO.**

Cabs for every make of truck and tractor.  
 Bodies for every kind of chassis.

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Cincinnati, Ohio

**REFINISH** *it with*

**NFR**

*the fast, inexpensive brilliant  
 new material that goes on wood  
 and metal alike—and needs no  
 polishing. Send for color card.*

**EGYPTIAN LACQUER MFG. CO.**

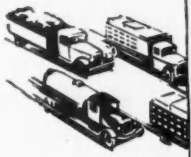
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## Choice Selling Space In Chicago

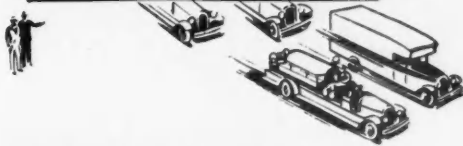
Two large desirable light rooms, 2736 square feet, located on sixth floor directly across from Carson Pirie Scott & Co. Wholesale. Center of Chicago downtown market,  $\frac{1}{4}$  block from Union Station, 2 blocks from Northwestern Station, 2 blocks from Elevated Trains, River Taxi service to all north side points at door, also near bus lines. High ceiling, large windows, and light on two sides. Very fine location for sales room, small jobbing business, or general offices. Rent Reasonable.

**THE HART MAGAZINE GROUP**

367 West Adams St. Chicago, Ill.



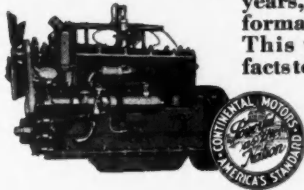
**"that  
fleet of trucks is  
certainly helping  
us cut costs."**



**"Continental-powered Brockways, all 22 of them, and turning in their 250 to 300 miles every day in the week as regular as clockwork . . . and with practically no more attention than you give to winding a clock, too."**

Continental engineers constantly check up on Continental-powered equipment in the field. Furthermore, before Continental releases an engine from the factory, the purpose for which it is to be used is carefully analyzed and checked back upon the records of similar installations. Since Continental has produced more than 3,000,000 engines in the past 30 years, its sources of this practical information are almost inexhaustible. This practice of applying known facts to each individual problem plays

a very large part in Continental's ability to supply engines that always give satisfactory, dependable and economical service.

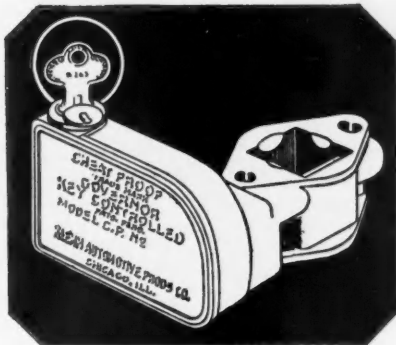


## Continental Engines

Continental Motors Corporation • Detroit and Muskegon

## Do Truck Drivers

## Help Your Sales ?



Some do. Some don't. ALL MUST, when every truck you sell is equipped with a KLEMM "Cheat-Proof" Governor.

KLEMM "Cheat-Proof" GOVERNORS eliminate abuse; reduce maintenance costs; cut accidents to a minimum; extend the life of any truck.

KLEMM is key controlled. Install it . . . adjust it . . . lock it . . . forget it. Allows flexible acceleration with full power at governed speed. GUARANTEED unconditionally for 2 years. Sold on 30-DAY FREE TRIAL. And in addition, every KLEMM sale pays you a liberal profit. Write for complete details.

**KLEMM AUTOMOTIVE PRODUCTS CO.**

1304 N. Halsted St., Chicago, Illinois

FOR ECONOMY

## KLEMM "Cheat-Proof" GOVERNOR

FOR SAFETY

The Commercial Car Journal

# PRECISION!



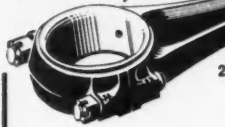
Just as precision wins out on the baseball diamond, so it is vital with C & B quality connecting rods.

Clawson & Bals Connecting Rods are babbitted and machined with greatest precision and to exact dimensions. The most modern equipment and methods insure this utmost precision and accuracy.

Clawson & Bals' careful workmanship and rigid inspection invariably result in perfect alignment and correct centers on every connecting rod produced by Clawson & Bals, Inc.

## CLAWSON & BALS, Inc.

*Quality Connecting Rods Exclusively*



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Moline, Ill.

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Dallas, Texas

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Detroit, Mich.  
1420 Seventh St., S.  
Minneapolis, Minn.

200 Peden Ave.  
San Antonio, Texas.  
211 E. 14th St.  
Kansas City, Mo.

1302 Morton St., Baltimore, Md.

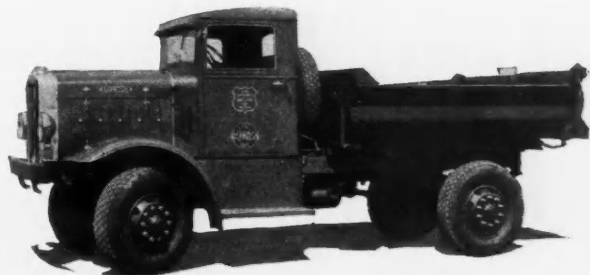
86 Brookline Ave.  
Boston, Mass.

410 Peachtree St., N. E.  
Atlanta, Ga.

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Complete Line Handled by Leading Replacement Parts Wholesalers



## Trucks with Power and Speed

Sometimes your trucks need power. Sometimes they need speed. But at all times they must have in reserve both power and speed, sufficient to meet the most unexpected emergency.

In all their capacities, from 2 to 7 tons, Oshkosh 4-Wheel Drive Trucks have ample reserve to do any tough job—and see it through.

That is one important reason why users find them so satisfactory, and dealers so gratifying to sell. Ask us for further details.

## OSHKOSH MOTOR TRUCK, INC.

Oshkosh, Wisconsin

August, 1932



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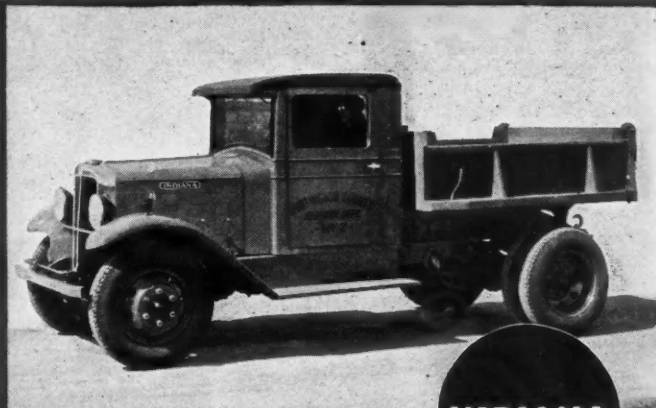
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# The BIG PROFIT Twins



**White**



**INDIANA**

1. **MORE PROFITS IN 1932**  
The practical opportunity to make more sales—be in on more deals—both trucks and coaches.
2. **STABILITY AND LEADERSHIP OF COMPANIES**  
Now, more than ever, the support of strong, established companies is necessary to permanent business.
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The widest range of models and prices in the industry—a truck or coach for every buyer—from the lowest priced to the highest quality.
4. **GREATEST VALUE**  
Every truck chassis All-Truck—designed and built specifically for Truck work—no compromise—cannot be equaled, point for point and dollar for dollar.
5. **WORLD-WIDE SERVICE**  
The White and Indiana Dealer is a link in a world-wide service system. He is in line for profitable business from long distance operators passing through his territory. World-Wide Service also helps the Dealer to make sales, particularly to cross-country operators.
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You have only to ask our representative for the details.
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Genuine White and Indiana parts are sold to dealers at a discount, assuring you profitable volume with a low inventory, due to the accessibility of branch parts stock.
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Only 10% down for 90 days—through the White Motor Securities Corporation.
9. **LOWER FINANCE CHARGE**  
Time payments at less cost to customers—through the White Motor Securities Corporation. Your capital is freed for local operations.
10. **SALES ASSISTANCE**  
Individual sales assistance or counsel—always immediately available—from your nearby White Branch—when you call for it.

Get the facts on this NEW double franchise that lets you in on EVERY deal!

The new White—Indiana franchise gives you *two* complete and highly salable lines—the leading product and widest range of models for both price and highest quality buyers—a chance to sell *every* operator who is in the market for a truck or coach—a bigger market—more volume—more profits.

It has the sound, permanent backing of pioneer companies in their respective fields—acceptance and reputations built up through many years. It offers you a partnership in profits designed to meet today's competitive conditions—and become increasingly valuable through the years.

*Mail the coupon today for all the facts*

THE WHITE COMPANY,  
842 East 79th Street, Cleveland, Ohio

Please send me all the details of the profit-making possibilities in my territory with the White—Indiana franchise.

Dealer's Signature \_\_\_\_\_

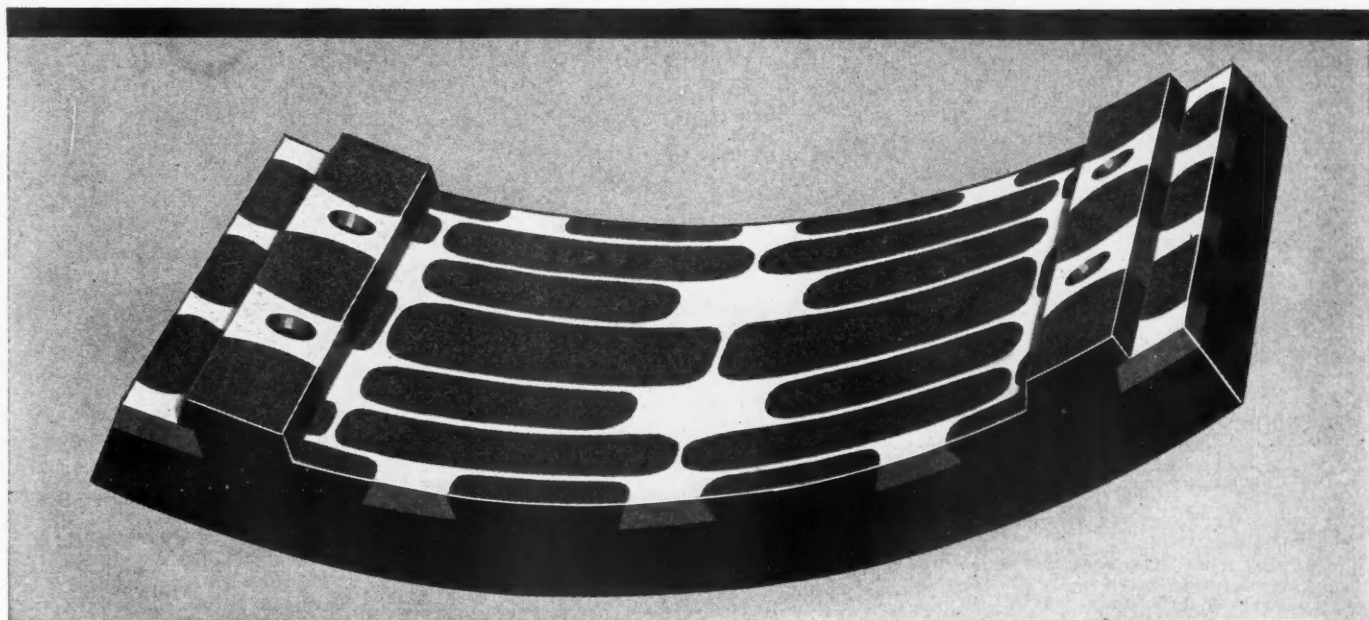
Firm Name \_\_\_\_\_

Street Address \_\_\_\_\_

City and State \_\_\_\_\_



# **American Brakeblok for Heavy-Duty Installation wears very slowly**



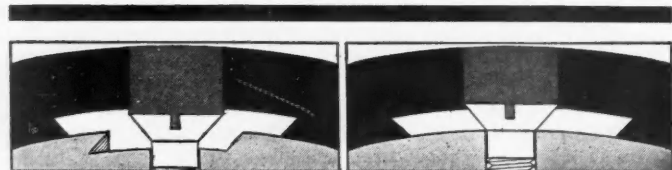
Slow and uniform wear are characteristics which play a big part in the exceptional economy of American Brakeblok in heavy-duty service. Added to these qualities which are inherent in the material itself, is the greater thickness of usable material provided by the Alloy-Grid Backing Plate.

This backing plate, an exclusive American Brakeblok development, gives the installation definitely longer life. Its strength and precise construction assure a perfect contact between the back of the American Brakeblok and the face of the shoe. Uniformity of wear and accuracy of installation are thus promoted. Standard counter-sunk head-bolts are used and the bolt-head is

moved farther from the face of the drum.

American Brakeblok is non-metallic and contains no rubber. It is a dense, homogeneous solid, formed under pressure and completely heat-treated before being ground to size. The high temperatures and pressures of heavy-duty service do not alter its characteristics.

American Brakeblok is supplied for any type of commercial vehicle, in Rolls, Full-Coverage Sets, Keeper Type and Bolt-On Full-Coverage Type. In the latter type the material is now available for both plain-faced and slotted shoes, or with the regular mesh backing. Write for information on any installation in which you are interested.



**For Slotted Shoes**

Here are cross-sectional views of the new Bolt-On Full-Coverage Type American Brakebloks with the Alloy-Grid Backing Plate; (left) for the American Brake Materials Corporation's Slotted Shoes; (right) for plain faced shoes . . . The Alloy-Grid Backing plate moves the bolt-head farther

**For Plain-Faced Shoes**

from the face of the drum. This means a substantial increase in the amount of usable material, with corresponding longer life. The greater strength of the Alloy-Grid Backing Plate makes it possible to use standard counter-sunk head bolts, instead of the special flat head type for this purpose.

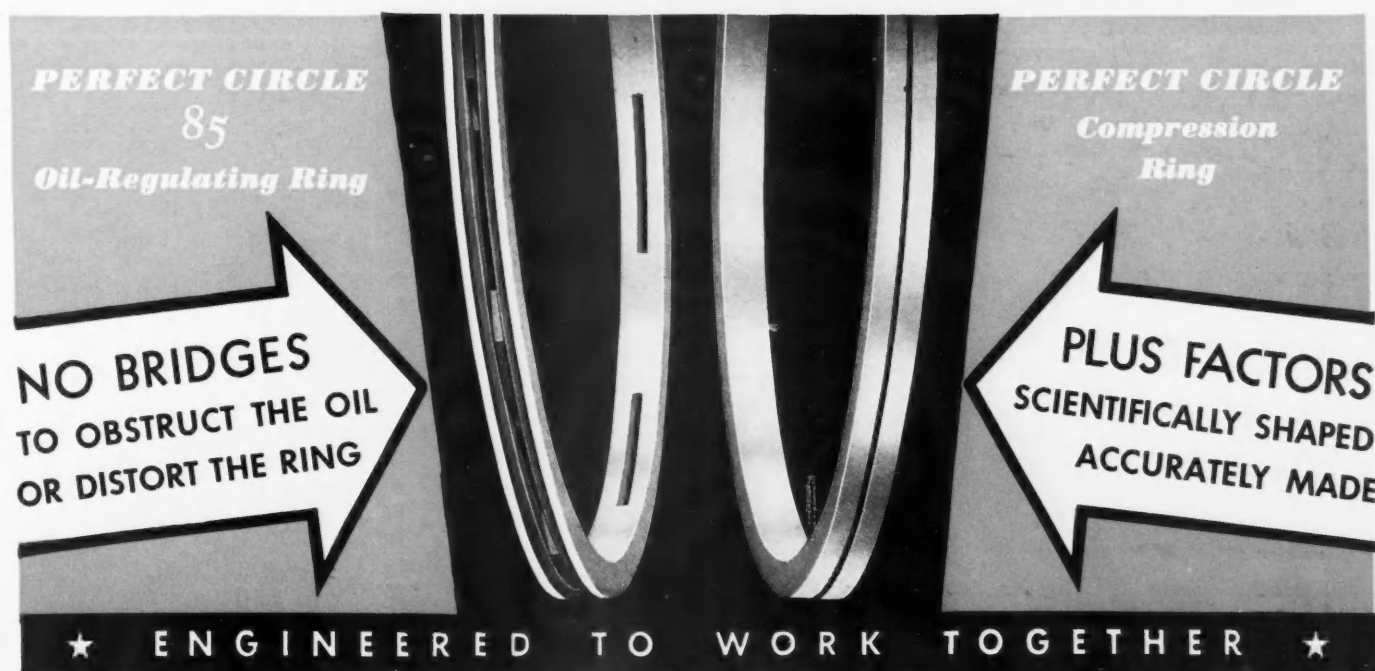
## AMERICAN BRAKE MATERIALS CORPORATION

Industrial and Automotive Division  
**AMERICAN BRAKE SHOE & FOUNDRY COMPANY**  
 4660 Merritt Avenue, Detroit, Michigan, U. S. A.  
 Sales Offices: New York, Cleveland, Chicago, St. Louis  
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**FOR 100% RESULTS  
USE PERFECT CIRCLES 100%.**



**PERFECT CIRCLE  
PISTON RINGS**

# "GOOD TRUCKS TO MAKE MONEY WITH" *...an owner's tribute to Studebaker Trucks*



EARNING  
ABILITY  
*is the  
true measure  
of a truck*

**TO MAKE MONEY FOR YOU  
STUDEBAKER TRUCKS are:—**

**ENGINEERED** by the best brains in the industry. Every essential feature is provided to insure satisfactory performance. Ultra-modern trucks for 1932 requirements.

**BUILT** to give uninterrupted, economical service. On the toughest jobs, Studebaker stamina earns the respect of experienced truck men.

**PRICED** to 1932 standards of economy. Low list prices—low dealer and factory profits, enable Studebaker to maintain volume.

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1½ TON CHASSIS

**\$670 to \$745**

The most powerful truck ever sold at such low prices.

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Outselling all other 2 ton trucks but one.

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The lowest priced 3 tonner.

Prices f. o. b. factory.  
Bumper and spare tire extra.

These trucks move their tonnage at a lower net cost per ton mile than any other trucks built today. That is why owners say—

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